PAPER TRADE JOURNAL

THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD

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Vol. CVII
No. 16

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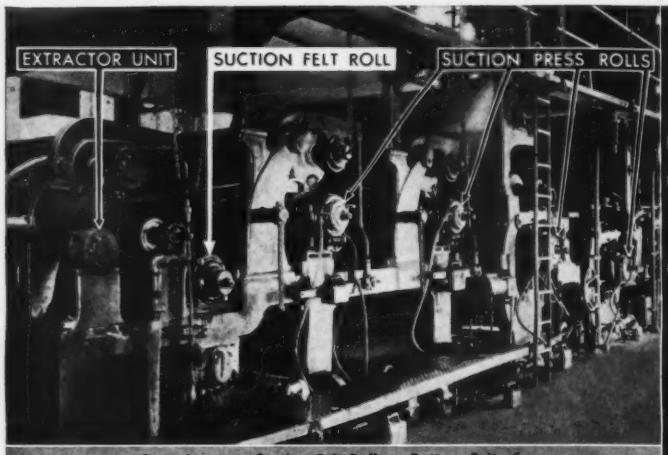
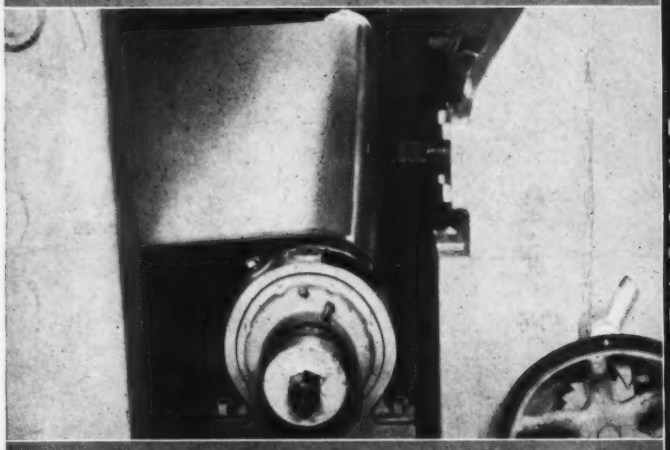
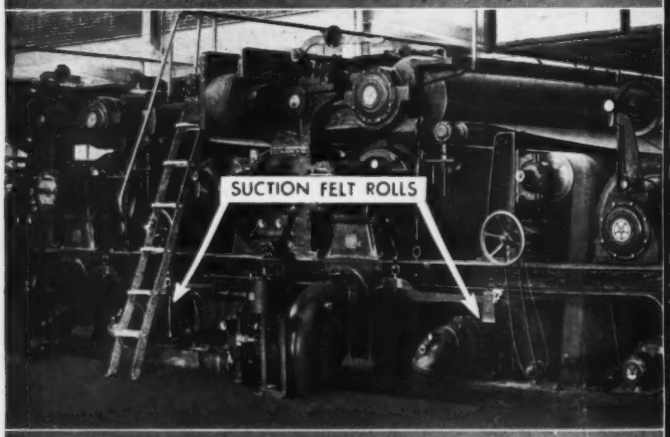
DOWNINGTOWN



Downingtown Suction Felt Roll on Bottom Felt of Board Machine with Duo-Dehydrating Press Part



Downingtown Suction Felt Roll on Press Felt of a Yankee Tissue Fourdrinier Machine. Built by Downingtown



Downingtown Suction Felt Rolls on First and Second Press Felts of 236" Kraft Paper Fourdrinier

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Versatility of SUCTION FELT ROLLS

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D

OLDEST MANUFACTURER OF MODERN SUCTION ROLLS

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THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD

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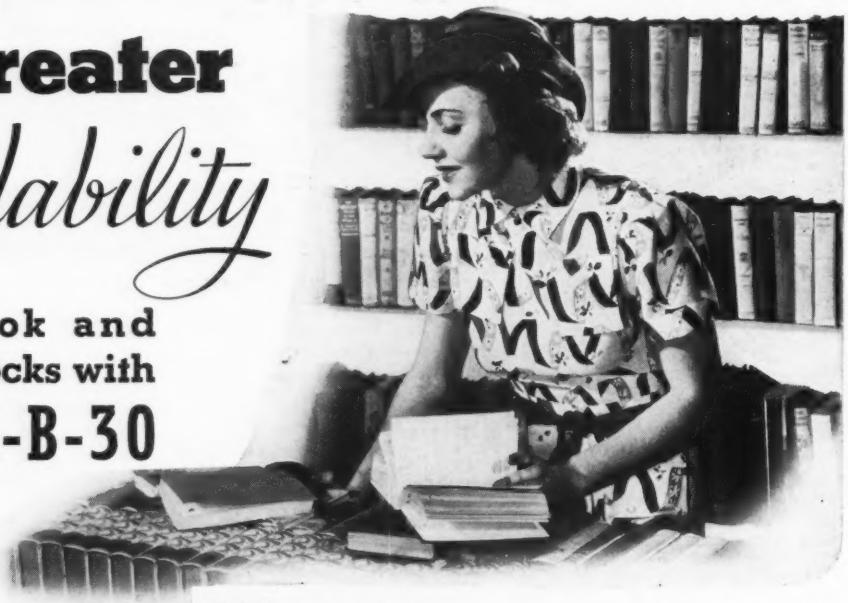

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SIXTY-SEVENTH YEAR

PAPER

Established Feb. 17, 1899
Consolidated Nov. 16, 1899
with PAPER TRADE JOURNAL.

Vol. CVII, No. 16 Thursday, October 20, 1938

PAPER

Established Sept. 21, 1918
Consolidated Feb. 19, 1925
with PAPER TRADE JOURNAL.

Paper Men Attend National Safety Council

Silver Jubilee Meeting of National Safety Council At Chicago Attended By More Than 8,000, With Large Attendance of Representatives of Paper Industry — Beloit Iron Works Official Talks On Mill Equipment.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., October 17, 1938—The Silver Jubilee annual session of the National Safety Council attracted a near record breaking crowd to Chicago during the past week as more than 8000 industrialists, safety experts and representatives of the public crowded into the Hotel Stevens to participate in the many sessions.

Included in that audience were hundreds of representatives of paper, printing and allied industries who focused the major part of their attention on the many fine exhibits of accident prevention and safety insuring products and on the strong program of the Paper and Pulp Session which was developed under the direction of the Secretary and program chairman, F. A. Robinson of the Kimberly-Clark Corporation of Neenah.

Paper and Pulp Section Meets

With general chairman George J. Adams of the International Paper Company and vice-chairman A. E. Winslow of Hollingsworth & Whitney in charge of the various sessions, the Paper and Pulp section held its initial session on Monday afternoon, October 10 when the past years activities were reviewed by Mr. Adams who pointed out the splendid record made by the paper and pulp industry but who added that much more work had to be done to attain anything near perfection. "Safety—an Operating Problem" was discussed by A. B. Hansen, executive vice-president of the Northern Paper Mills while Dr. H. S. Hulbert, consulting psychiatrist, reviewed the psychology of dealing with employees in another highlight of the first afternoon's program. Perhaps one of the best of the discussions was that given by Leon Shaffrey, yard superintendent of Bowater's Newfoundland Pulp & Paper Mills Co., Ltd. of Newfoundland.

"Another proof that little things are important in safety comes from the paper industry", said Mr. Shaffrey who told of the arduous and dangerous job of handling pulp wood which chalks up most of its lost-time accidents to scratches, bruises and blisters. "Discharging wood from ships is dangerous work and everyone connected with it should be most cautious", Mr. Shaffrey said. "Foremen, hoistmen, signalmen and workmen should be constantly on the alert. Workmen should have good steel pulpwood hooks and keep them in good shape. Poor hooks and dull points are a source of injury. Gauntlet leather gloves are excellent to use, particularly at the beginning of the season. Blisters acquired at the start are often the cause of serious infection. Scratches are the most common cause of infection and possibly the most neglected. Most accidents of a more serious nature are caused by human failure, the worker failing to recognize the hazards of the job."

M. W. Dundore Discusses Paper Mill Machinery

Tuesday was Paper and Pulp Section day at the Exhibits but in between times the executives were able to present another interesting program which began when M. W. Dundore, production manager of the Beloit Iron Works, discussed the designing of paper mill machinery for production and safety. "Every paper mill should be an example of design and engineering for accident prevention and should be a tangible expression of faith in all the practical and humanitarian principles of safety", declared Mr. Dundore. "Designing for safety has a greater influence upon the producing operator than any other factor because an accident may and often does prevent the producer from operating the very equipment designed for his use. Mills are not honest with themselves or their employees when they deny that safety pays recurrent dividends on an accelerated scale".

Mr. Dundore enumerated several suggestions for lowering paper mill accident hazards and at the same time increasing efficiency in production. The first point dealt with the need for careful planning of plant layouts to promote safety. Machine vibrations, he said, contribute heavily to the hazards of paper making and he added that scientific balance of rotating parts and use of resilient media were the best methods of combating these dangers. Friction was another hazard listed for designers who also were charged with the duty of perfecting machinery and equipment to minimize the handling of the product by workmen.

Among recent applications of safety principles in paper mill designs mentioned by Mr. Dundore were

(Continued on page 21)

Program To Conserve Wisconsin Timber

Six-Point Plan To Expand and Protect Pulp Wood Supply Presented By F. B. Trenk At October Meeting—Dr. Heuser To Speak On "Synthetic Fibers"—Shipping On Fox River Resumed — Other Industrial News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., October 17, 1938—A six-point program for expansion and protection of Wisconsin's timber resources and replenishment of its pulp wood supply was presented by F. B. Trenk, associate professor of agricultural engineering at the University of Wisconsin, at a meeting at Madison, Wis. October 16 of the Northern Lakes States Regional Committee.

Trenk's report criticizes current lumbering practices such as early cutting of new trees, as economically wasteful and destructive of natural development of soil conditions conducive to improved forest stands. He recommends for immediate action:

Present forest protection such as the CCC should be continued, but with more efficient mechanical devices.

Purchases by the Federal Government within established forest areas should be completed since little more than half the land is now owned by the government.

The State should complete purchase of lands within established State forests.

The legislature should increase forest crop appropriations.

State and Federal tree nurseries should be expanded.

Forest mapping and land inventory of all public forest lands should be completed as soon as possible. (Most of this has been done.)

Shipping on Fox River Resumed

Barge shipment of coal to mills of the Fox River Valley has been resumed by the Fox River Navigation Company and efforts will be made to complete the supply at various mills in sufficient quantity for the winter before navigation closes for the season. Shipping was suspended for three weeks because of the exceedingly high water level in the Fox River and Lake Winnebago, caused by abnormal rains during the late summer and early fall. The current became too powerful for safe navigation with tugboats.

To prevent floods, all fourteen sluice gates at the dam at Neenah, Wis. have been open, and six were open at the control dam at Menasha, Wis. The water level reached a height of eleven inches above the crest of the dam when conditions were at their worst, but has receded to six inches above the dam and is rapidly approaching normal.

Dr. Heuser to Speak on "Synthetic Fibers"

Monthly meetings of the Northeast Wisconsin section of the American Chemical Society will be resumed Tuesday evening, October 18, with a session at the science hall of Lawrence College, Appleton, Wis. The speaker will be Dr. Emil Heuser, staff member of the Institute of Paper Chemistry at Appleton. His subject will be "Synthetic Fibers," and will be supplemented by demonstrations and slides. Dr. Heuser has had many years of research activity in the whole field of cellulose, lignin, pentosane, wood pulp, paper and rayon abroad and in Canada and the United States.

D. Romund Moltzau of the Institute of Paper Chemistry, is chairman of the section; Kenneth A. Craig of Lawrence College, is vice-chairman, and Peter P. Pritzl of St. Norbert College, West De Pere, Wis., is secretary-treasurer.

Kimberly Clark Safety Contest

In a six months' safety contest at the Kimberly-Clark Corporation's mill at Kimberly, Wis., the "Black" division was declared the winner for scoring 934 points in keeping its departments the safest in the mill. Included in this group were employees of the sulphite, woodroom and planing departments. The "Blues" were in second place with 889 points, and included the beaters, electric, steam and chlorine departments.

The contest began April 1, 1938 and ended Sept. 30, 1938. The winners are to be furnished a banquet by the losers, and it is to be held at the mill clubhouse soon.

Each department put on a program at monthly safety meetings, and the prize for the best of these went to the "Yellow" for a magician's act put on by C. E. Jurgenson, a mill worker. Al. Adams won the September prize of $5.00 for the best answers in a "true" and "False" questionnaire.

John P. Pulliam Honored with Dinner

John P. Pulliam of Milwaukee, Wis., president of the Wisconsin Public Service Corporation, was honored with a testimonial dinner at Oshkosh, Wis. October 8, in commemoration of fifty years of service to the public. He began his career at the age of fourteen as a telegraph operator for the K. & I. Bridge Company, Louisville, Ky., his native city. His first job in the public utility field was in 1907, when he came to Oshkosh as superintendent of the Winnebago Electric Traction Company. For this reason the dinner was held in that city, with his present and former associates from near and far attending. He has been president of the Wisconsin Public Service Corporation since 1932, although he has been with the organization in various capacities since 1917.

At the dinner he was presented with a leather bound volume containing a message signed by approximately 1,500 employees of the corporation. It also contained resolutions from the companies with which he is associated, messages from the American Federation of Labor unions, and congratulatory messages from Gov. Philip F. La Follette and associates and friends in the utility and paper industry throughout the United States.

Mr. Pulliam is chairman of the board of the Badger Paper Mills, Inc., Peshtigo, Wis., and a director of the Flambeau Paper Company, Park Falls, Wis.

Competition and Profit of Newspapers

Canadian Newsprint Association Issues Survey On Business Trends of U. S. Newspapers—Losses of Competitors—Raising of Advertising Rates Doubtful Expedient—Cost of Newsprint Minor Factor In the Situation.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., October 17, 1938—For the information of newsprint manufacturers the Newsprint Association of Canada has just issued a 36-page report on "Business Trends of U. S. Newspapers" that affords a comprehensive survey of the position of the newspaper publishing industry in relation to advertising, circulation and finances, and the bearing of these on newsprint consumption.

According to this report, the most noticeable trend in the American newspaper business since 1930 has been the downward curve of advertising linage and of revenue from advertising, while at the same time costs have been moving upward, with the notable exception of newsprint, which sold at record low levels throughout the five years 1933 to 1937 inclusive. This diminished advertising has been due particularly to the new competition of radio and the high-speed news and picture magazines.

Total advertising expenditure in the United States has been reasonably well maintained but the proportion devoted to newspaper advertising has declined materially, for had the newspapers' share of the 1937 expenditure been the same percentage as in 1929 they would have received an additional $87,000,000 of advertising revenue. To meet diminished advertising volume, combined with rising costs, the general method has been to increase advertising rates, which the report describes as "a doubtful expedient."

In spite of all, newspaper profits in the period since 1930 seem to have been remarkably well maintained, judging by annual statements and salary lists but it is probable that the true profit margin has been distinctly reduced.

Loss in National Advertising

Newspaper advertising reached its highest level from 1926 to 1929 inclusive, but all types of linage had decreased in recent years, losses being most marked in those categories which compete directly with radio and magazines, that is to say in national advertising. As a whole in the first half of this year U. S. newspapers had lost 58 per cent of the national advertising they carried in 1929, but only 28 per cent of their local linage. In departmental store linage the low was only 12 per cent.

Some important classes of national advertising had almost disappeared from U. S. daily newspapers this year. Motor car linage, for example, has been only 29 per cent of what it was in 1929. Without the help of liquor advertising, which is barred from radio broadcasting, national advertising in newspapers would be lower by another 15 per cent or so during the last four years.

Discussing the general trend of milline rates, the report says that although their general trend has been upward, their most striking feature is their lack of flexibility throughout the 15 years of 1923 to 1937. They seemed to have had no direct relationship either to variation in publication costs (such as newsprint prices) or volume of linage. This became particularly significant when compared with magazine and radio rates, which had steadily declined.

"In general," says the report, "over a long period, the tendency of newspaper rates has been to remain stationary when newsprint and other commodities have declined, and to move upward again when commodity prices have recovered. Perhaps the tendency has been an inescapable part of publishing difficuties; the fact remains that its effect on linage volume and newsprint consumption is inevitably towards reduction of both."

Distribution of Advertising Expenditure

With respect to distribution of advertising expenditure, the report says that advertising revenues of newspapers, magazines and radio fell from $1,150,000,000 in 1929 to $621,000,000 in 1933 and recovered to $945,000,000 in 1937.

"The real significance of the figures," says the report, "lies in the shares obtained by the three media. In 1929 and in 1933 newspaper advertising revenues were 69 per cent of the total. Since 1933, however, both radio and magazines have increased their shares at the expense of the newspaper. The latter's percentage of the total fell from 69 per cent in 1933 to only 60 per cent in 1937, while magazines recovered almost all the ground lost between 1929 and 1933 and radio continued to increase its share. Preliminary figures for 1938 indicate that this trend is continuing. Radio's percentage will be appreciably higher than in 1937 and almost all this further improvement seems to have been at the expense of the newspaper."

Under the heading of "Advertising Revenue," the report says that while newspapers still obtain the major share of advertising appropriations they have been losing ground at a substantial rate. In 1937 radio's revenue from sales of advertising time was $125,000,000, or $97,000,000 more than its share would have been if it had obtained only its 1929 percentage of 1937 expenditures. Of this huge gain no less than $87,000,000 was at the expense of newspapers. In 1933 newspapers obtained 48.6 per cent of total national advertising expenditures, while magazines and radio combined obtained 42.2 per cent. Last year the newspaper share was down to less than 41 per cent, while magazines and radio obtained slightly over 50 per cent.

Rise in Newspaper Circulation

Dealing with circulation the survey notes that the sustained rise in newspaper circulations has been one of the most encouraging trends of the newspaper business, but points out that while gains in gross circulation are impressive, per capita circulation of U. S. daily newspapers in 1937 was actually one per cent less than in 1929. In other words, since 1929 the population has been growing faster than daily newspaper circulations. On the other hand the

weekly news and picture type magazine has been developing rapidly while radio "circulation" shows huge increases, it being estimated that about 37,000,000 radio receiving sets are now installed in the United States, serving 26,000,000 homes. It is added: "It seems probable that most American households now obtain part of their daily news over the air, particularly in connection with market reports and sports results. It is impossible to say to what extent such news distribution competes with newspapers and to what extent it complements newspapers and perhaps even stimulates demand for them."

Meanwhile the trend has been towards raising circulation rates, 70 per cent of all U. S. newspapers having raised their circulation rates during the past three years, this upward trend beginning during a period when newsprint prices were at their lowest levels. The result has been an immdiate loss of circulation followed by some recovery during a period of a few months, though it remains to be seen whether or not the recovery will be general. In the meantime newsprint consumption will be affected.

Newspaper Revenues Lag as Costs Rise

Pointing out that newspaper revenues are now undoubtedly still considerably below the 1929 level, and that newspaper operating costs have risen, the report says: "One question of importance to newsprint manufacturers is the percentage of a publisher's total costs represented by newsprint. It would seem that 20 per cent is now the maximum for a typical city newspaper and probably as low as 12 to 15 per cent for papers of small circulation. If these calculations are correct, each variation of one dollar in the present $50 price, up or down, would affect a publisher's total costs by something less than one-half of one per cent. It is quite clear that newsprint has gradually become a smaller and smaller factor in newspaper publication costs, and is no longer to be compared with payroll as the vital item."

As to newspaper earnings, with diminished advertising linage and rising costs one would expect to find that newspaper profits have suffered heavily in recent years. The earnings figures as reported, up to the end of 1937, constitute a surprisingly good showing. The outlook, however, is less encouraging, and it is almost certain that most earnings in 1938 will be considerably below their 1937 level.

The survey is almost wholly of a factual nature and is supplemented by a wealth of statistics. It offers no "conclusions" beyond questioning the expediency of raising advertising rates and pointing out how relatively unimportant the price of newsprint has been in connection with the difficulties with which newspaper publishers have been and are now faced.

Current Books on Rubber

Until now, *Rubber Age*, located at 250 West 57th street, New York, has issued two separate volumes covering, respectively, bibliographies on rubber literature for the years 1935 and, then, 1936. Its newest compilation entitled "Annual Bibliography of Rubber Literature for 1937," third in the series, has just been published. It is available in paper binding at one dollar and in cloth binding at two dollars. Present contribution is 128 pages.

To Open Paper Bids November 21

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., October 19, 1938 — The Joint Congressional Committee on Printing has announced that it will receive bids on November 21 for the semi-annual paper supply for use of the Government Printing Office for the six months periods beginning January 1 next. On November 28 the Joint Committee will meet to discuss awards.

The quantities of paper for which the bids are asked include the following:

1,000,000 pounds newsprint paper.
3,661,000 pounds machine-finish book paper.
300,000 pounds antique book paper.
300,000 pounds off-set book paper.
90,000 pounds lightweight machine-finish book paper.
250,000 pounds 50 per cent rag antique book paper.
20,000 pounds 75 per cent rag laid antique book paper.
15,000 pounds 100 per cent rag antique book paper.
2,000,000 pounds supercalendered book paper.
520,000 pounds coated book paper.
30,000 pounds lithograph paper.
3,380,000 pounds mimeograph paper.
350,000 pounds U S M O safety writing paper.
10,000 pounds U S M O writing paper.
5,000 pounds safety writing paper.
7,702,500 pounds writing paper.
460,000 pounds map paper.
1,170,000 pounds manifold paper.
6,815,000 pounds bond paper.
867,000 pounds ledger paper.
1,075,000 pounds index paper.
2,000 pounds tissue paper.
345,000 pounds cover paper.
460,000 pounds manila paper.
855,000 pounds kraft paper.
1,500 pounds paraffin paper.
400,000 sheets gummed paper.
124,000 pounds blotting paper.
3,000 pounds stereotype molding paper.
20,000 pounds oiled manila tympan paper.
3,000 pounds plate-wiping paper.
3,000 pounds back-lining paper, for case making.
10,000 pounds high finish red sulphite.
120,000 pounds manila tag board.
1,300,000 pounds calendered tag board.
30,000 pounds manila cardboard.
150,000 sheets railroad board.
500,000 pounds bristol board.
6,000,000 pounds United States postal card bristol board.
25,000 sheets pressboard.
6,000 pounds news board.
710,000 pounds chip and strawboard.
15,000 pounds marble grained board.
36,000 pounds box board.
380,000 pounds binder's board.

Masonite Makes Grand Report

The Masonite Corporation reports for the fiscal year ended August 31, profit of $1,144,274 after taxes and charges, equal to $1.96 a share on 538,842 shares of common stock, compared with $1,728,091, or $3.03 a share on 536,740 shares of common stock in the preceding fiscal year.

Promoting Good Will in the Paper Trade

Philadelphia Paper and Cordage Association Issue First Number of *News 'n' Nonsense* As Medium to Promote Good Fellowship Among Membership and In Business Contacts — Many New Lines Announced.

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., October 17, 1938 — Much credit is due members of the paper and cordage industry who have turned editors of a sheet called *News 'n' Nonsense,* which aims to "promote good fellowship in the paper and cordage industry and to encourage the interchange of business among the members." This sheet, the first edition of which came into being this past week, is bright, peppy and breezy, and while it is stated thereon that it will be "published now and again by the Philadelphia Paper & Cordage Association, Inc.," it is almost a certainty that those who are fortunate enough to be on the mailing list will demand that a regular publication date be observed. Fred'k I. Brower, Atlantic Gummed Tapes, Drexel Bldg., is editor, and collaborating with him as associate editors are Geo. K. Hooper, Hooper Paper & Twine Company, E. K. Lay, E. K. Lay Company, Joseph S. Miller, Garrett-Buchanan Company, Harry S. Platt, Denney Tag Company, and E. L. Richards, Buffalo Envelope Company.

Editor Fred. Brower in a short editorial says: "We believe *News 'n' Nonsense* can be made interesting to all of you, and our notion is to report bits of trade news—to indulge in personalities of a not-too serious nature. Your contributions will lend a friendly and personal touch to the whole scheme of things . . . Without them the staff won't get to first base because it's a job they cannot hope to do alone."

Paper Salesmen Meet at Luncheon

The Rittenhouse Association of Philadelphia Paper Salesmen had as guest speakers at their recent luncheons, two outstanding speakers. They were John Cocoran, News Commentator of WPEN, who gave some interesting highlights on the Sudeten situation, also the situation in central Europe, and A. B. Lickey, from the Federal Bureau of Investigation, who spoke on crime and its prevention. The next luncheon meeting of the Association is scheduled for Friday, October 21st at the Bullit Building restaurant, 131 South 4th street, at which time it is planned to have an open discussion as to what type of program the members would like to have and recommendations on future activities, such as the formation of a bowling team for the group.

Many Wholesalers Announce New Lines

Molten Paper Company has added Opaque Bantam Manifold in a full range of colors and sizes to its line of opaque papers.

Whiting-Patterson Company, Inc., has added a Rosback power paper drill to its finishing department.

The Paper House of Pennsylvania, Philadelphia, announces the addition to its coated paper lines of Advertisers' Enamel, Foldette Enamel and Viking Enamel, manufactured by the Waverliet Paper Company.

D. L. Ward Company and Wilcox-Walter-Furlong Paper Company have taken on for distribution Tufwite Offset, manufactured by Riegel Paper Corp.

The Philadelphia Card & Paper Company, Phila., has been appointed a distributor for the following lines: Coverall Duplex, made by Holyoke Card & Paper Company; Gala Cover, a product of the Chemical Paper Manufacturing Company, and Orkid Cover, manufactured by the Pennsylvania Paper Company.

"How Business Can Be Had"

Cy Norton, who is manager of sales promotion of Strathmore Paper Company, in an article entitled "How Business Can Be Had", which appeared in *Printer's Ink,* states that salesmen are the men who can answer two vital questions: "What gets business today?" and "What doesn't?' He then appends the thoughts of 21 salesmen who have been successful in selling such varied lines as office equipment, publications, paper, advertising agencies, appliances, machinery, displays, printing, etc. None of the cases includes retail selling.

The 21 successful sales methods may be summarized as follows:

1. Offer constructive suggestions.
2. Sell profit.
3. Sell design and style.
4. Comb territory for new accounts.
5. Concentrate on best accounts.
6. Let advertising help you, especially with new accounts.
7. Individualize your selling.
8. See more prospects.
9. Look for new sales arguments.
10. Demonstrate!
11. Use testimonials more.
12. Use a better build-up and more pressure.
13. Make fair comparisons.
14. Watch your talk and follow a plan.
15. Entertain *personally.*
16. Give them facts and figures.
17. Cash in on loyalty.
18. Sell the future.
19. Tell them about their competitors.
20. Get into clubs, politics, etc.
21. Ask yourself, "Why did I lose that order?"

Each method is developed in the text, resulting in an article that is replete with information for salesmen.

To Distribute Champion Line

The Miller & Wright Paper Company, New York City, have been appointed New York distributors for the entire line of the Champion Paper and Fibre Company.

Financial News of Pulp and Paper Industry

Look For Further Movement Toward Reorganization of Abitibi Power and Paper Co. — Container Corp. Reports Net Earnings of $16,144 For Quarter As Compared With Loss of $53,198 For Preceding Quarter.

NEW YORK STOCK EXCHANGE

High, Low and Last for the Week Ending October 19, 1938

	High	Low	Last
A. P. W.	3	3	3
Armstrong Cork Co.	48	42⅞	43¾
Celotex Corp.	29¾	27	28¼
Celotex Corp., pf.	69⅜	69	69⅜
Certain-Teed Products Corp.	12¼	11⅛	11⅜
Certain-Teed Products Corp., pf.	44¾	42½	42½
Champion Paper & Fibre Co.	29	26⅜	27
Champion Paper & Fibre Co., pf.	96	95	96
Congoleum-Nairn Co.	29	27½	27½
Container Corp. of America	17¾	16⅜	17¼
Continental-Diamond Fibre Co.	10½	10	10⅛
Crown-Zellerbach Co.	14⅜	13	13¾
Crown-Zellerbach Co., pf.	87¼	84¾	87
Flintkote Co.	29½	27⅛	28¼
Robert Gair	5⅛	4½	4½
Robert Gair, pf.	16	14⅛	14⅛
International Paper & Power	10¾	10	10¼
International Paper & Power, pf.	45¾	43	43
Johns-Manville Corp.	111½	105	105
Johns-Manville Corp., pf.	128	126¼	126¼
Kimberly-Clark Corp.	28½	27	27
MacAndrews & Forbes	29	28¾	29
MacAndrews & Forbes, pf.	120	120	120
Masonite Corp.	61	57¾	57½
Mead Corp.	14¼	13½	13½
Mead Corp., pf.	77	69⅞	77
Paraffine Companies, Inc.	55	52	55
Paraffine Companies, Inc., pf.	100½	99½	99½
Ruberoid Co.	33	31⅝	31¾
Scott Paper Co.	50	48½	49¼
Sutherland Paper Co.	30¼	29¼	29½
Union Bag & Paper Corp.	14	12¾	13
United Paperboard Co.	7¾	6⅝	7
U. S. Gypsum Co.	114⅞	107	110
U. S. Gypsum Co., pf.	171	170	171

NEW YORK CURB EXCHANGE

High, Low and Last for the Week Ending October 19, 1938

	High	Low	Last
American Box Board Co.	11	10	11
Brown Co., pf.	29½	26	26
Great Northern Paper	35½	35½	35½
St. Regis Paper Co.	4⅛	3⅝	4
St. Regis Paper Co., pf.	69½	63½	69½
Taggart Corp.	6¼	5⅝	6¼

Look for Abitibi Reorganization

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., October 18, 1938—Further movement toward reorganization of the Abitibi Power & Paper Company, Limited, Toronto, will in all likelihood be proceeded with at an early date. October 12 was the dead line or zero hour for a further appeal being entered against the decisions of two Ontario courts that have been adverse to the Ripley or bondholders representative committee plan for reorganization of the company. No appeal was entered, and this means that all who desire a plan will have to proceed by means of agreement and compromise if anything is to be accomplished, because all groups of security holders must be consulted and give seventy-five per cent vote for it. It is probable that the impasse reached by the failure of different interests to get together in previous proceedings is removed by this refraining from making an appeal and that preliminary conversations at least will soon proceed. In recent weeks there have been many rumors in regard to reorganization plans and it is of course probable that many such tentative plans have been and will be made and considered by different interests, but it is scarcely likely that any important plan will come before courts or security holders again until those behind it have ascertained by conferences that it will be acceptable to all groups.

Naturally all groups are waiting for an improvement in earnings. For the first eight months of 1938, the net profit was a little more than half what it had been for the same period in 1937. It is not yet plain that in 1938 earnings will be sufficient to give adequate depreciation after present requirements for bond interest. Junior securities believe in a much higher level of profits than this and would fight any plan which would not give them a chance of having some share of any future profits which may be made. Old plans have probably all gone by the board as a result of the changed earning situation though the plan of the liquidator, R. S. McPherson, to proceed under the Companies Creditors Arrangement Act is still before the court and might be a basis for negotiations or conversations.

Container Corp. Makes Good Report

Reversing the trend in the first half of this year, third quarter operations of the Container Corporation of America were recorded in black ink, Walter P. Paepcke, president, announced last week.

Net earnings in the last three months amounted to $16,144, as contrasted with losses of $53,198 and $67,053 in the first and second quarters, respectively.

Financial results for the quarter, nine months and twelve months, as compared with the same periods last year, were—

	1938	Per Share	1937	Per Share
3 months ending Sept. 30	$16,144.92	$.021	$426,462	.55
9 months ending Sept. 30	*$104,106.06	*.133	1,745,756	2.23
12 months ending Sept. 30	*$65,757.33	*.084	2,174,866	2.78

* Indicates loss.

In each instance, results are after all charges, including adequate reserve for year-end adjustments.

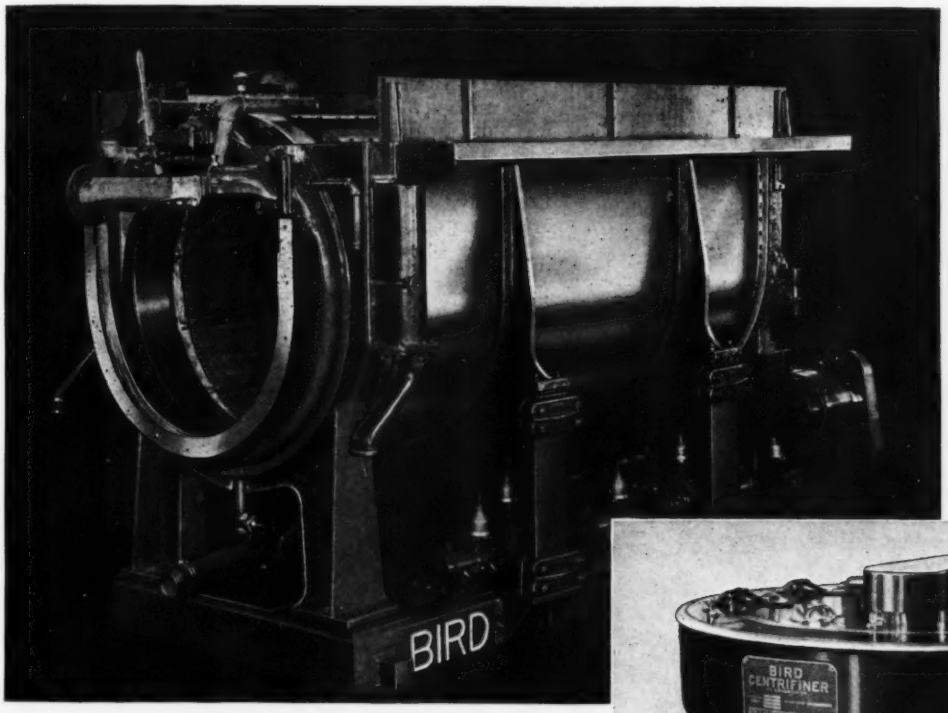
In commenting on the third quarter results, Mr. Paepcke said: "Due to low shipment and operating volume July was the worst month of the year. With lower costs and better volume, August resulted in a modest profit and September became the best month of the year so far. The outlook for October is encouraging. During the last few months, there has been a rather steady, though gradual, improvement in volume. However, price levels are still unsatisfactorily low."

Since the first of the year, there has been a reduction of working capital of $13,614, present current ratio is 4.12 to 1. During the last nine months, funded debt has been decreased by $270,000 par value.

Stevens & Thompson to Reorganize

[FROM OUR REGULAR CORRESPONDENT]

HOOSICK FALLS, N. Y., October 17, 1938—Announcement was made here last week by officials of the Stevens & Thompson Company that plans for reorganization are under way which will mean the



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BIRD MACHINE COMPANY

SOUTH WALPOLE, MASSACHUSETTS

concentration of greater activity at the Greenwich branch in Washington county. Under the general plan the Walloomsac plant of the company will be leased and if approval of stockholders is given the Greenwich branch will become the center of operations early in December. The proposed reorganization must be approved by two-thirds of the bondholders and a majority of the stockholders and also confirmed by the court following a hearing at which they and the creditors will be given the opportunity to appear. It was also announced that the authorized capital stock of the concern is to be changed under the plan. Officials propose a total amount of 15,000 shares at a par value of $10 per share, making a total capitalization of $150,000. They also contemplate $100,000 of new capital as vital to the financial structure of the concern. Creditors will be paid in full and all contracts met with bondholders receiving dollar for dollar for the principal amount of their bonds and modified bonds. In addition the plans call for their representation in the company and offers them an opportunity to share in anticipated profits in the form of one share of the new common stock for each $100 of face value of bonds which the bondholder shall possess at the time of the acceptance of the reorganization. Under this arrangement the bondholders will have 4,959 shares of the capital stock. Another part of the plan is the naming of John W. Bright as president and general manager of the company. He has supervised activities at the Greenwich branch for several years. Howard B. Thompson, who has served as president, will act as treasurer while other officials will be selected by the new board of directors.

The new directorate besides Messrs. Thompson and Bright will include Chester C. Wagar, Frank L. Stevens and Fred N. Stevens.

Reorganization of Lake Sulphite Co.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., October 17, 1938—From reports heard on various sides during the past few days prospects for a reorganization of the Lake Sulphite Pulp Company, at Red Rock, Ont. have improved. It is possible that some definite announcement may be made at an early date. According to the proposals in hand the plant would be used for the manufacture of rayon pulp or a combination of rayon and bleached pulp for finer papers. It is also indicated that the proposals for a new financial setup include provision to pay the creditors of the company who have been waiting since the collapse early in the year. Increased activity and stronger prices in the shares of the existing Lake Sulphite Pulp Company have been noted. From a former low of two dollars sales have been made as high as five dollars and the prevailing market is given from three to five.

In order to put the company on its feet it will be necessary to raise about six millions of new capital. About half of this, it is said, will be represented by first mortgage bonds which were created but never issued by the present company. The balance would be raised in the form of a junior security and to that end present security holders might have to make some sacrifice.

However, plans are not yet sufficiently advanced to indicate just how the new money will be raised or what concessions the present debenture or stock holders will be asked to make.

Government Paper Bids

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., October 19, 1938 — The Government Printing Office has received the following bids for 5,000 pounds (73,000 sheets) of 50 per cent rag, 38 x 48 white manifold paper: Cauthorne Paper Company, 16.42 cents; Walker, Goulard Plehn Company, 16.45 cents; Whitaker Paper Company, 16.29 cents; Mudge Paper Company, 16.39 cents; Stanford Paper Company, 16.33 cents; R. P. Andrews Paper Company, 16.5 cents; Barton, Duer & Koch Paper Company, 16.32 cents; and Marquette Paper Company, 16.37 cents.

For 5,000 pounds of 24 x 36 oiled manila tympan paper: Link Paper Company, 7.25 cents; Mudge Paper Company, 7.35 cents; Cromwell Paper Company, 7.73 cents; R. P. Andrews Paper Company, 6.75 cents; Mathers-Lamm Paper Company, 6.75 cents; Walker, Goulard Plehn Company, 7.35 cents; Whitaker Paper Company, 6.73 cents; and Cauthorne Paper Company, 7.23 cents.

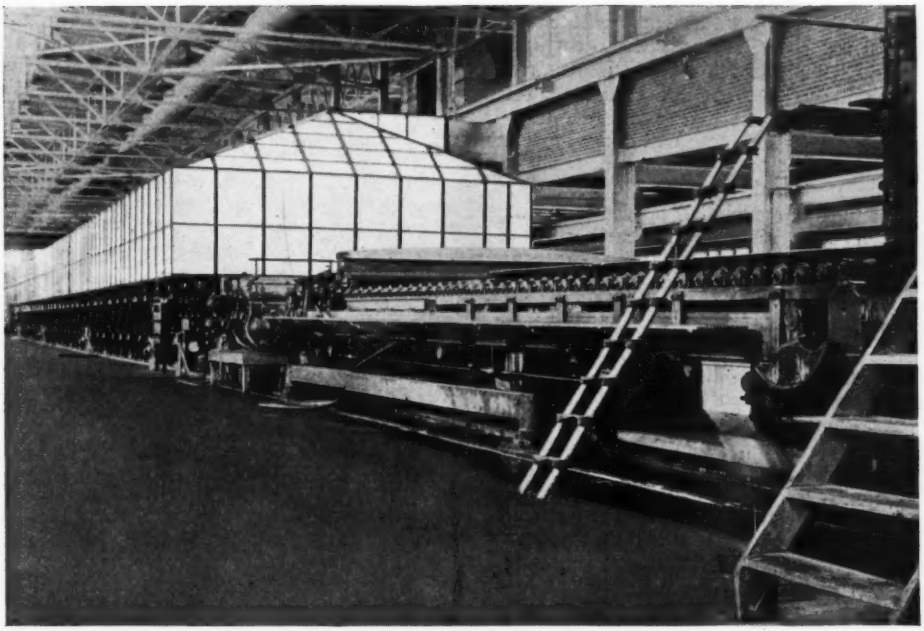
For 40,000 pounds of yellow sulphite writing paper in 32 inch rolls: Virginia Paper Company, 5.298 cents; Old Dominion Paper Company, 6.24 cents; Mudge Paper Company, 5.27 cents; Whitaker Paper Company, 5.25 cents; Butler Company, 5.64 cents; Paper Corp. of U. S., 5.62 cents; Mathers-Lamm Paper Company, 5.3 cents; Aetna Paper Company, 5.41 cents; R. P. Andrews Paper Company, 5.65 cents; Barton, Duer & Koch Paper Company, 5.72 cents; Stanford Paper Company, 5.79 cents; Graham Paper Company, 5.65 cents; Cauthorne Paper Company, 5.298 cents.

For 77,000 pounds (1,000,000 sheets) of 24 x 38 M. F. book paper: Walker, Goulard Plehn Company, 5.36 cents; Butler Company, 5.39 cents; Cauthorne Paper Company, Inc., 5.39 cents; Paper Corp. of U. S., 5.38 cents; R. P. Andrews Paper Company, 5.39 cents; Marquette Paper Company, 5.31 cents; Barton, Duer & Koch Paper Company, 5.39 cents; Stanford Paper Company, 5.39 cents; Graham Paper Company, 5.39 cents; Perkins-Goodwin Paper Company, 5.39 cents; Whitaker Paper Company, 5.39 cents; John F. Post, Inc., 5.39 cents; and Old Dominion Paper Company, 5.39 cents.

For 37,500 pounds (1,500,000 sheets) of 21 x 32, 50 per cent rag, white manifold paper: Virginia Paper Company, 16.23 cents; Marquette Paper Company, 15.98 cents; R. P. Andrews Paper Company, 16.13 cents; Barton, Duer & Koch Paper Company, 16.01 cents; Walker, Goulard Plehn Company, 16.28 cents; Stanford Paper Company, 16.2 cents; Mudge Paper Company, 16.09 cents; Whitaker Paper Company, 16.06 cents; and Cauthorne Paper Company, 16.098 cents.

For 25,200 pounds (300,000 sheets) of 24½ x 32 yellow mimeograph paper: Aetna Paper Company, 5.8 cents; Graham Paper Company, 6.45 cents; Stanford Paper Company, 5.79 cents; Barton, Duer & Koch Paper Company, 5.79 cents; Marquette Paper Company, 5.75 cents; R. P. Andrews Paper Company, 6.55 cents; Mathers-Lamm Paper Company, 5.75 cents; Paper Corp. of U. S., 5.86 cents; Mudge Paper Company, 5.72 cents; Whitaker Paper Company, 5.6 cents; and Old Dominion Paper Company, 5.864 cents.

ANOTHER BELOIT MACHINE



THIS FINE PAPER MACHINE IS THE PRODUCT OF THE MODERN ENGINEERING AND MANUFACTURING FACILITIES WHICH MAKE BELOIT THE LEADER IN MEETING THE EXACTING DEMANDS OF THE PAPER INDUSTRY

THE BELOIT WAY BELOIT IRON WORKS PAPER MACH'Y BELOIT, WIS. U.S.A. **IS THE MODERN WAY**

General Statement as to Coverage of the Fair Labor Standards Act of 1938

Elmer F. Andrews, administrator, Wage and Hour Division, Department of Labor, on October 12 released the following interpretative bulletin prepared in the office of the General Counsel—

Interpretative Bulletin No. 1

The statute does not confer upon the Administrator any general power to issue rulings including industries within the coverage of the Act, or excluding them. At one stage of the legislative history, a draft of the Act provided that the Administrator should hold a succession of hearings with reference to the various industries, after which hearings, if the facts warranted, he was required to issue an order declaring the industry to be an industry affecting interstate commerce; and by virtue of such order the particular industry was to come within the application of the Act. No such provision was included in the bill as it finally passed. Under the Act, employments are included or excluded by the terms of the statute itself as interpreted by the courts, and not by the force of any administrative action. Interpretations announced by the Administrator, except in certain specific instances where the statute directs the Administrator to make various regulations, definitions and classifications, serve therefore to indicate merely the construction of the law which will guide the Administrator in the performance of his administrative duties, unless and until he is directed otherwise by authoritative ruling of the courts.

Under Sections 6 and 7, the wage and hour provisions are applicable to employees "engaged in commerce or in the production of goods for commerce". "Commerce" is defined as trade, commerce, transportation, transmission, or communication among the several States, or from any State to any place outside thereof—or roughly, "interstate commerce". In the preliminary declaration of policy in Section 2, Congress recited that it sought to remedy certain evils, namely, "labor conditions detrimental to the maintenance of the minimum standard of living necessary for health, efficiency, and general well-being of workers", which Congress found "(1) causes commerce and the channels and instrumentalities of commerce to be used to perpetuate such labor conditions among the workers of the several States; (2) burdens commerce and the free flow of goods in commerce; (3) constitutes an unfair method of competition in commerce; (4) leads to labor disputes burdening and obstructing commerce and the free flow of goods in commerce; and (5) interferes with the orderly and fair marketing of goods in commerce". From this declared policy of Congress, it is evident that, apart from certain specific exemptions enumerated later in the statute, Congress intended the widest possible application of its regulatory power over interstate commerce; and the Administrator, in interpreting the statute for the purpose of performing his administrative duties, should properly lean toward a broad interpretation of the key words, "engaged in commerce or in the production of goods for commerce."

It is noted that the coverage as described in Section 6 and 7 does not deal in a blanket way with industries as a whole. Thus, in Section 6, it is provided that every employer shall pay the statutory minimum wage to "each of his employees who is engaged in commerce or in the production of goods for commerce." It thus becomes an individual matter as to the nature of the employment of the particular employee. Some employers in a given industry may not be subject to the Act at all; other employers in the industry may be subject to the Act in respect to some of their employees, and not others; still other employers in the industry may be subject to the Act in respect to all their employees, except those specifically exempted by the later provisions of Section 13(a).

The first category of workers included,—those "engaged in (interstate) commerce" applies, typically but not exclusively, to employees in the telephone, telegraph, radio and transportation industries since these industries serve as the actual instrumentalities and channels of interstate commerce. Employees who are an essential part of the stream of interstate commerce are also included in the phrase "engaged in commerce"; for example,—employees of a warehouse whose storage facilities are used in the interstate distribution of goods.

The second category of workers included,—those engaged "in the production of goods for (interstate) commerce", applies, typically, but not exclusively, to that large group of employees engaged in manufacturing, processing, or distributing plants, a part of whose goods moves in commerce out of the State in which the plant is located. This is not limited merely to employees who are engaged in actual physical work on the product itself, because by express definition in Section 3 (j) an employee is deemed to have been engaged "in the production of goods, if such employee was employed in producing, manufacturing, mining, handling, transporting, or in any other manner working on such goods, or in any process or occupation necessary to the production thereof, in any State." Therefore, the benefits of the statute are extended in such employees as maintenance workers, watchmen, clerks, stenographers, messengers, all of whom must be considered as engaged in processes or occupations "necessary to the production" of the goods. Enterprises cannot operate without employees of these kinds. If they were not doing work "necessary to the production" of the goods they would not be on the payroll. Significantly, it is provided in Section 15 (b) that "proof that any employee was employed in any place of employment where goods shipped or sold in commerce were produced, within ninety days prior to the removal of the goods from such place of employment, shall be prima facie evidence that such employee was engaged in the production of such goods." Hence, except for the special categories of employees within the exemptions of Section 13, all the employees, in a place of employment where goods shipped or sold in interstate commerce were produced, are included in the coverage, unless the employer maintains the

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★ MONASTRAL Fast Green GSWD is another distinctive development in the field of pigment colors. Remarkable fastness properties make this new green of unusual interest to consuming industries.

MONASTRAL Fast Green GSWD is a water dispersible type in powder form, yields brilliant yellowish shades of green possessing outstanding fastness toward light, acids, alkalies and chlorine. A homogeneous product, it has definite advantages over green pigments which are mixtures.

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burden of establishing, as to particular employees, that their functions are so definitely segregated that they do not contribute to the production of the goods for interstate commerce as these terms are broadly definited in the Act.

The Act does not cover plants where the employees work on raw materials derived from within the State and where none of the products of the plant moves in interstate commerce. This is true, even though the product so manufactured and sold locally comes in competition with similar products which have been manufactured elsewhere and have been moved in interstate commerce. Provisions designed to include such local industries appeared in various drafts of the bill, but were stricken out and not included in the bill as it finally passed.

Since the Act contains no prescription as to the place where the employee must work, it is evident that employees otherwise coming within the terms of the Act, are entitled to its benefits whether they perform their work at home, in the factory, or elsewhere.

The act is not limited to employees working on an hourly wage. The requirement of Section 6 as to minimum wages is that the employee must be paid *at the rate of* not less than 25 cents an hour (the rate is stepped up in succeeding years). This does not mean that employees cannot be paid on a piece-work basis after October 24; it merely means that whatever the basis on which the workers are paid, whether it be monthly, weekly, or on a piece-work basis, they must receive at least the equivalent of the minimum hourly rate. Rules and regulations to be prescribed by the Administrator will provide for the keeping of records in such form as to enable compensation on a piece-work basis to be translated into terms of an hourly rate.

This bulletin does not deal with the various important exemptions provided in the statute. Some of those exemptions are self-executing; others call for definitions and classifications by the Administrator, as to which announcements will be made as soon as possible.

Present Paper Industry's Recommendations

Charles W. Boyce, executive secretary of the American Paper and Pulp Association has sent out the following announcement regarding the act:—

On October 12 a committee composed of the following representatives of the paper and pulp industry presented the industry's recommendations in respect to the Fair Labor Standards Act to Elmer F. Andrews, Administrator, and discussed with him some of the general features of the administration of the Statute:

D. C. Everest, executive vice-president and general manager, Marathon Paper Mills Company, Rothschild, Wis. President, American Paper and Pulp Association.

A. R. Heron, Crown-Zellerbach Corporation, San Francisco, Cal.

Arthur L. Hobson, President, St. Croix Paper Company, Woodland, Maine. President, Association of Newsprint Manufacturers of the United States.

Ernst Mahler, executive vice-president, Kimberly-Clark Corporation, Neenah, Wis.

Reuben B. Robertson, executive vice-president, Champion Paper and Fibre Company, Canton, N. C.

Carl E. Whitney and Robert E. Canfield, Wise, Whitney and Canfield, 122 E. 42nd St., New York, N. Y. Counsel, American Paper and Pulp Association.

Charles W. Boyce, executive secretary, American Paper and Pulp Association, 122 East 42nd Street, New York, N. Y.

In opening the discussion Mr. Andrews described the tremendous task of preparing for the administration of the Act and he stated definitely that the appointment of industry committees will not be undertaken immediately except in the low wage industries, for the Industry Committee is only concerned with increasing wages from 25 cents to 40 cents per hour. He said that a committee for the paper and pulp industry may not be appointed for some time to come. Mr. Andrews emphasized the necessity of segregating industry into very broad groups and he mentioned the grouping in the textile industry as an example.

Mr. Andrews expressed the hope that reduction in working hours would not seriously affect weekly earnings. In many cases, however, earnings may be reduced in proportion to the reduction in hours because there is no legal necessity to offset the loss of working time by upward adjustments in hourly wage rates.

In the case of salaried employees whose salaries are guaranteed under all operating conditions, he intimated that the essential question as to compliance with the Act is whether the fixed salary is higher than the minimum wage which would result by calculating the hourly rate equivalent, including overtime at time and one-half, under the provisions of the Act.

Although it is not prohibited by the Act, Mr. Andrews advised against reducing hourly wage rates in order that working hours in excess of forty-four hours per week may be continued without increasing weekly earnings above those paid prior to the effective date of the Act.

In regard to flexibility in working hours, Mr. Andrews stated that he felt that he had no latitude. However, after consideration of the effect of the temporary absence of relief workers and of arranging vacation schedules, he recognized that the industry had a serious problem. He asked the association's counsel to confer with his legal staff to see if any way can be found to obtain flexibility without overtime payment. This problem, Mr. Andrews felt, would appear in the case of all continuous operating industries.

The definition of bona fide executive and administrative capacity is now being prepared and those falling within the definition, as well as professional workers, will be exempted. Mr. Andrews did not state what the definition would be, but he clearly indicated that every effort would be made to reach a practical solution. In fact, throughout, Mr. Andrews implied that interpretations would reflect practicality in so far as the language of the Act permits.

Mr. Andrews announced that a release was being prepared which would state that auxiliary and maintenance workers and clerical forces would come under the act. Here again he indicated practicality by stating that this did not mean that "secretaries," for instance, would be included. Undoubtedly the line of distinction will be clarified in early regulations.

Considerable time must elapse and much experience must be gained before the full significance of

the act is known. Intent to comply is important during this trial period. There is no indication that Mr. Andrews intends to "crack down" upon industry; quite the contrary, the committee felt that he intends to act soundly and reasonably. This does not imply laxity in any way; he frequently referred to the necessity of positive action in the low wage industries. In fact, he stated that inspectors would be in the field in practically every locality on October 24th.

It must be borne in mind that the law definitely goes into effect on October 24; that many problems of interpretation cannot and will not be clarified by regulations prior to that time and that, since the Act provides for suits by employees as well as official enforcement, the only safe practice is to comply with the strict wording of the Act unless and until modifying regulations are forthcoming.

ATTEND NATIONAL SAFETY COUNCIL

(Continued from page 9)

the horizontal dual press to replace the multiple vertical type, development of a winder shaft puller that simplifies an awkward and dangerous operation; mechanical dumping of rolls, improved overlead lifts, suction drum presses for removing excess water; fully enclosed hypoid and spiral gear drives with smoothly operating clutches; fully enclosed chain drives; electrically operated calendar lifts and safer designs of broke conveyors and broke doctors. Still needing the attention of safety engineers, Mr. Dundore pointed out, were manually operated valves, floor covering materials, resilient mats for machine foundations, machine rooms designed to suit the equipment, ladders moving on tracks to facilitate mounting and manipulation operations and automatic guides and controls.

Anglo-Canadian Co. Awarded Trophy

On Thursday, October 13, the Paper and Pulp Section reassembled for luncheon when data on the 1937-38 safety contest was reviewed by the contest committee chairman, A Scott Dowd. Of major interest was the *Paper Industry* magazine trophy presentation by E. B. Fritz, publisher, giving the trophy to the Anglo-Canadian Pulp and Paper Company of Quebec City. The Paper Industry trophy is understood to be the most noteworthy of its kind in the country and was first presented in 1925. The paper industry welcomed the fact that it was given for the first time to a Canadian company not only because it would cement present friendly relations but also act as an incentive toward increased accident prevention work in Canada. The Anglo-Canadian firm reported only two slight accidents in around a million man-hours worked—a most remarkable record.

The National Safety Council also awarded special prizes to members of the pulp and paper industry in each of the major classifications.

Paper Mill Executives Discuss Safety Factors

During the afternoon, the section re-assembled to hear Dr. L. H. Frechtling, director of the industrial relations division of the Champion Paper & Fibre Company, discuss the advantages of physical examinations from the viewpoint of the personnel director. Round table "safety kinks" were then discussed by D. B. Chant, Ontario Pulp and Paper Company; R. G. McGivney, Oswego Falls Corporation, J. A. Limpert, Kimberly-Clark Corporation and R. W. Croucher, personnel director of the Minnesota & Ontario Paper Company.

Mr. Croucher's remarks, the closing ones of the official program, served to admirably condense the trend of thought in evidence during the sessions. "First aid instruction to industrial workers pays dividends, not only in the expected reduction in the severity of accidents but surprisingly, by reduction in accident frequency", he declared. "First aid instruction gets at the meat of the matter", he said, "by holding continually before the students the subject of accidents, injury, suffering and loss of pay. Is it any wonder that they finish their courses with a clear understanding of the importance of accident prevention and the desirability of a safety educational program among the workers and that our records show that among those injured on the job in the course of a year very few are holders of first aid certificates?"

Mr. Croucher suggested a form of instruction calling for attendance once a week for a matter of three months, believing such a program would retain more interest than a nightly program continuing for a period of two weeks or so. The number of men allowed in a class should be limited to about twenty-five. More than thirty makes it cumbersome for the instructor. "I have come to the conclusion", the speaker added, "that in a plant where interest has been successfully aroused by the safety director, about 5 per cent of the personnel will take up the study each year. The number of repeaters from year to year under favorable conditions will be about 2 per cent of the personnel. From these second and third year men will come those whom you can trust with your first aid kits and their maintenance, and who can supervise the administering of first aid to injured workers".

Newsprint Shipments at High Level

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., October 17, 1938—According to the Newsprint Association of Canada, shipments of newsprint from the Dominion in September reached the highest level of the year, the total being 230,346 tons, as compared with 204,668 tons in August. Even at that figure, they were still 23.4 per cent below the shipments in September, 1937. It was not the American market, however, that was mainly responsible, but overseas markets, for while it is true that sales to United States customers were higher by 9,607 tons, those to overseas markets, at 45,617 tons, were higher than in the previous month by 15,963 tons. For the year to date total shipments from Canada amounted to 1,771,003, as compared with 2,613,809 for the similar period of 1937, a decrease of 32.2 per cent.

Smith, Dee & Lane Get New Lines

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., October 17, 1938—Smith, Dee & Lane, have become New England representatives for the Allied Specialty Bag Company, Baltimore, Md., manufacturers of glassine, waxed, "Cellophane," and window bags, plain and printed. The firm is now in a position to supply paper merchants with a complete line of paper products for the bakery trade.

Pacific TAPPI Meets at Portland

The first dinner meeting of the 1938-39 Season of the Pacific Section was held in Portland, Ore., October 4, 1938 at the Heathman Hotel. One hundred and two men, from the Portland district, as well as from various parts of the Northwest, attended the dinner.

The Shibley Award

N. W. Coster, chairman of the section, presided, and opened the meeting with a short description of the programs planned for the coming year. He then announced the prize for the best paper presented by mill men at the meetings, which is to be known as the Shibley Award, in honor of the late Kenneth Shibley, who first proposed this contest. Mention was also made of the letters which were sent out this fall, giving some of the men in the district a sketchy outline of the types of membership in the association which were available to them.

Announcement was made of the national fall meeting which is to be held in Seattle in 1940. G. S. Brazeau of the Weyerhaeuser Timber Company, Everett, Wash., made a short talk, asking for the cooperation and support of the section to make the national meeting at Seattle equal or better than the meeting in 1934 in Portland. As this would be only the second time that the national association has ever come to the Northwest, it is hoped that the meeting can be made outstanding in the history of the association.

Dad Wood Speaks

To inject a little humor into the more serious business of the meeting, one of the well-known members of the section, A. D. Wood, affectionately known as "Dad Wood", was introduced as the Mayor of Pumpkin Center, because of his recently taking residence in a settlement by that name and commuting from there to Camas, Wash. "Dad" had to respond to a call for a speech.

Elimination of Solid and Liquid Matter

The first speaker on the program was Mr. Evald Anderson, of the Western Precipitation Company of Los Angeles. Mr. Anderson gave a very fine discussion of the elimination of solid and liquid matter from the discharge vents in pulp and paper mills. This was discussed both from the view of preventing a nuisance to the surrounding territory, as well as the economics of recovery of valuable chemicals. After telling about the different systems and apparatus available for this purpose, the speaker described a method of measuring the volume of gases. He showed by a diagram of the apparatus and graph of results, how they have experimentally proved their method of measurements, and found out the proper velocity of gas in the sampling tube, in relation to the velocity in the pipe being sampled. Charts were also shown illustrating the soda and sulphate losses from recovery furnaces of both the spray and rotary types. Losses in scrubbers was also discussed and it was stated that a few years ago the economic value of the materials lost was the ruling factor, and the precipitators were none too efficient, but now the nuisance factor makes greater efficiency necessary.

A discussion of Cotrell Electrical Precipitators followed, and a chart was shown on the soda and sulphate collection in a Cotrell Electrical Precipitator. The operation of this precipitator under wet conditions was explained, and it was brought out that in Europe, where pyrites are used, there is enough iron oxide present to catalyze to oxidation of the SO_2 to SO_3 in the wet cooled gases. In America, where sulphur is used, the problem is different.

Odor Problem Discussed

The odor problem was discussed in connection with pulp mill odors, as well as sewage disposal plants. The efforts to oxidize the gases with ozone have not been very effective, and chlorine is more effective. Oxidation by air at high temperatures works quite well and where fuel cost is not important, any firebox is a good deodorizer. A diagram was shown of an interesting installation at Pasadena, Calif., which was used for deodorizing gases from a sewage dryer at a sewage disposal plant. A chart of time and temperature on this deodorizer was also shown. Driers for handling gases that contained combustible matter were discussed.

The meeting was opened for questions, where such questions as sublimed sulphur in precipitators, washing of electrodes in electrical precipitators, efficiency of Cotrell and the voltages used were discussed.

Otto Hartwig Speaks

The second speaker of the program was Otto Hartwig, of the Crown Zellerbach Corporation, who spoke on some of the recent legislation on wages and hours and Social Security. Mr. Hartwig expressed pleasure at being able to speak to the technical group who must keep up with all changes in industry, whether they are in raw materials, processes, or personnel management. Mr. Hartwig made an interpretation of the recent legislation and commented on the fact that the paper industry of the Pacific Coast would not be affected very much by the provisions of the wages and hours bill. Detailed explanations of the recent acts, federal, as well as those of the states of Washington and Oregon, were welcomed by the group, and it was felt that the Pacific section was indeed fortunate in having a man so well qualified as Mr. Hartwig to discuss these new laws.

Those in Attendance

Those who attended the meeting were as follows:—

C. E. Ackley, Oregon City, Ore.; B. R. Adams, Oregon City, Ore.; C. R. Adams, Longview, Wash.; G. A. Alkins, Camas, Wash.; E. Anderson, Los Angeles, Calif.; R. C. Armstrong, Longview, Wash.; J. Ashby, New Westminster, B. C.; L. E. Ashe, Longview, Wash.

F. C. Ed Baker, Longview, Wash.; W. R. Barber, Camas, Wash.; R. V. Bingham, Portland, Ore.; Carl Blom, Portland, Ore.; Carl E. Braun, Oregon City, Ore.; G. S. Brazeau, Everett, Wash.; John E. Brown, Portland, Ore.; G. W. Charters, Camas, Wash.

R. E. Chase, Tacoma, Wash.; Claud Christiansen, Camas, Wash.; Wm. W. Clarke, Longview, Wash.;

R. P. Conklin, Longview, Wash.; C. A. Corman, Longview, Wash.; N. W. Coster, Everett, Wash.; J. V. B. Cox, Portland, Ore.

E. G. Drew, Portland, Ore.; Arthur Erickson, Longview, Wash.; John T. Evans, Longview, Wash.; Carl Fahlstrom, Longview, Wash.; B. W. Farnes, Portland, Ore.; Lyle G. Fear, Portland, Ore.; James D. Fraser, Everett, Wash.; Harry Fromong, Oregon City, Ore.

Irving R. Gard, Seattle, Wash.; T. H. Grant, Vancouver, B. C.; J. E. Hanny, Camas, Wash.; O. R. Hartwig, Portland, Ore.; John E. Hassler, Portland, Ore.; R. S. Hatch, Longview, Wash.; S. Hazelquist, Longview, Wash.; Harland Robert Hever, Longview, Wash.; W. S. Hodges, Portland, Ore.; J. G. Hoffman, Jr., Portland, Ore.; Geo. W. Houk, Tacoma, Wash.; W. F. Hynes. Portland, Ore.; J. H. Hull, Camas, Wash.

Joe G. Jenkins, Oregon City, Ore.; L. Johnson, Oregon City, Ore.; W. A. Kelly, Portland, Ore.; W. N. Kelly, Longview, Wash.; S. B. Lewis, Longview, Wash.; J. G. Long, Camas, Wash.

A. H. Lundberg, Seattle, Wash.; R. V. Maier, Portland, Ore.; M. L. Mammen, Portland, Ore.; W. C. Marshall, Portland, Ore.; Robert Martig, Portland, Ore.; G. H. McGregor, Longview, Wash.; H. Norman Miller, Portland, Ore.; R. G. Mispley, Camas, Wash.; G. F. Mitchell, Portland, Ore.; T. E. Moffitt, Tacoma, Wash.; T. H. Moran, Longview, Wash.; C. W. Morden, Portland, Ore.; Harry Morgan, Longview, Wash.

M. E. Norwood, Vancouver, Wash.; F. A. Olmsted, Camas, Wash.; C. J. Page, Longview, Wash.; J. W. Peckham, Seattle, Wash.; Morris M. Peterson, Longview, Wash.; Frederic M. Pape, Seattle, Wash.

Al Raught, Longview, Wash.; Ralph Reid, Newberg, Ore.; H. H. Richmond, Portland, Ore.; Dewey Rigg, Longview, Wash.; W. C. Reiniger, Longview, Wash.; J. W. Robinson, San Francisco, Calif.; J. P. Rubush, Chicago, Ill.; Harlan Scott, Seattle, Wash.; Chas. M. Sever, Portland, Ore.; A. W. Shaw, Portland, Ore.; C. Sholderbrand, Oregon City, Ore.; D. L. Shirley, Portland, Ore.; J. L. Shively, Camas, Wash.; I. C. Shotwell, Camas, Wash.; A. P. Siebers, Longview, Wash.; Ray Smythe, Portland, Ore.; P. E. Sullivan, Seattle, Wash.

George L. Tepley, Seattle, Wash.; Earl G. Thompson, Seattle, Wash.; W. E. Thompson, Longview, Wash.; C. L. Triplett, Oregon City, Ore.; H. A. Vernet, Portland, Ore.; Harold C. Wall, Longview, Wash.; Wm. Webster, Tacoma, Wash.; L. H. Wear, Portland, Ore.; Bernhardt Weidenbaum, Camas, Wash.; Fred J. Weleber, Oregon City, Ore.; R. S. Wertheimer, Longview, Wash.; Boyd K. Wickwire, Longview, Wash.; A. D. Wood, Camas, Wash.; Edward C. Wood, Longview, Wash.

Plan Flood Walls in Connecticut

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., October 17, 1938—Complete plans are expected to be presented to the manufacturers of the city vitally interested in the flood walls to be erected on the westerly bank of the Connecticut River, within a short time. With but few exceptions, the mills interested are in the paper business and their officials look forward to the beginning of construction work within a few weeks. The first section of dike will be completed by June of 1939.

U.P.W. Wins in Sorg Paper Co. Vote

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., October 19, 1938 — The National Labor Relations Board has announced certification of the United Paper Workers of America, Local No. 112, an affiliate of the Committee for Industrial Organization, as exclusive collective bargaining agency for employees of the Sorg Paper Company, following a secret ballot election in both the paper mill and bag division of the company at Middletown, Ohio.

The union received 265 votes, with 257 votes being cast against it, 13 ballots challenged, and 3 ballots contested.

The regional director recommended that two of the three contested ballots be entirely disregarded, but that the third be counted. Of the 13 challenged ballots, he recommended that 6 be counted, that the challenge be upheld as to 5, and that no determination be made as to the challenges regarding ballots cast by two discharged employees unless necessary to a disposition of the case.

Objections to the intermediate report were filed by the company. It agreed that the two contested ballots which the regional director recommended be disregarded should not be counted in determining the votes cast for or against the union, but contended that they should be included in determining whether the union received a majority of the ballots cast. This contention the Board found without merit. In determining the question of a majority, only ballots validly cast are to be considered, it pointed out. Void votes cannot contribute to their total. The company also objects to the ruling on the third contested ballot. The Board found that this ballot was correctly counted.

The company also objected to the recommendation of the regional director upholding the challenges with respect to the ballots of Roy Gibson, William Herndon, James Lamb, and Harry Davis. "For the reasons set forth in the intermediate report", the Board stated, "we find that these ballots should not be counted. The challenges are accordingly upheld."

The Board considered the other exceptions to the intermediate report and found that no material issues with respect to the conduct of the ballot or to the intermediate report were raised. On September 23, 1938, the company filed with the Board in Washington, D. C., a motion for hearing, argument, opportunity to submit briefs, and for rehearing and reconsideration of the appropriate unit and other issues. The motion was denied by the Board.

The Board stated: "The unchallenged ballots cast, together with one contested and six challenged ballots which we have ruled should be counted, bring the total number of valid votes cast to 529. No decision has been made as to the challenged ballots of the two discharged employees. The possible number of valid votes cast is therefore 531. Since 265 unchallenged ballots and one contested ballot which we have held should be counted were cast for the Union, it has received a majority of the valid votes cast regardless of whether this figure be 529 or 531. It is, therefore, unnecessary to make any decision herein relative to the challenged ballots cast by the two discharged employees or to investigate and tabulate the individual preferences of the persons casting the six challenged ballots which we have ruled may properly be counted."

Lake States TAPPI Meets

The Lake States Section of the Technical Association of the Pulp and Paper Industry met following dinner on Tuesday evening, October 11, at the Conway Hotel in Appleton, Wisconsin.

Following the dinner, the meeting was called to order by the chairman E. H. Voigtman, who presented the speaker of the evening, A. H. Stanton of the Mason-Neilan Regulator Company. His subject was "The Economics Governing the Selection of Pulp and Paper Mill Control Equipment."

The lecture was divided into four sections, with discussions after each; in addition, 17 illustrative slides were shown.

The first section of the lecture was devoted to reducing and control valves. It was clearly shown by actual examples that to obtain satisfactory control as economically as possible, five factors must be considered.

(1). Possible modification of the original specifications covering sizes with regard to the pressures and capacities involved. This may lead to a cost lowering of the original design by one-third or one-half.

(2). The exactness of control actually required; the nature of the load variation; the operating procedure and the physical characteristics of the installation. These data may permit the use of direct operated valves in place of pilot operated valves with a corresponding lowering of cost.

Factors (1) and (2) affect the initial cost.

(3). The protection required and the procedure in event of any failure. Proper consideration of this factor reduces operating loss such as might occur on an avoidable "shut down".

(4). The maintenance of each item—an operating cost. Here the purchase of valves with stainless steel trim will mean a slightly higher initial cost but a much decreased maintenance cost.

(5). The actual value of the item in terms of process result, which is the final measure of return from the initial investment. This determines if the results justify the cost.

The second part of the lecture concerned itself with roll loading control for the paper mill. Illustrations of load control for presses, coating machine squeeze rolls, size press rolls, waxing machine rolls, calender stacks, and the like were given and the operation explained.

Such an installation results in the following economic gains: convenience and simplification of roll loading; greater uniformity of sheet; more efficient moisture extraction which in turn improves sizing take-up; more uniform sheet structure and caliper; a better sheet finish with less possibility of sheet damage; reduction in waste of stock and time during the start-up; possible reduction in excessive felt wear; load build up on the presses due to wrap-around reduced; decreased wash-boarding of the sheet due to inability of inert weights to compensate for sheet variation or rolls slightly out of round; elimination of such roll scoring as caused by wrinkles or folds when breaks occur; and sheet damage cut down due to excess load which might cause discoloration.

The third phase of the paper dealt with the metering of flow to sewers. An air bubble type of weir head recorder with a standard integrating unit and a proportionate sampling device, if desired, was described and explained. The accuracy of this instrument is given as within two per cent. The advantages are: continuous graphic picture of the weir flow and a record of the head; accurate totalizing of the flow at considerable saving in time; and continuous sampling for accurately controlling solid losses and keeping them to a minimum.

The final part of the discussion described automatic time cycle temperature control for indirect sulfite digesters. The installation of such a system at the Kimberly plant of the Kimberly-Clark Corporation was described. The cooking is entirely automatic in accordance with a predetermined curve and automatically conforms to this curve; also, a time cycle pressure controller operates the relief, continuing in its operation after the temperature control has been shut down and until the blow down. The advantages of a potentiometer control of temperature measurement over the standard thermal system were given. By means of an air operated controller the temperature control point is automatically reset to give the required cooking curve. The entire instrument is equipped so that even the maximum temperature of the cook can be easily changed.

The advantages obtained were: constant cooking time; accurate spacing of digester cooks making the load on the gas recovery system constant; and successful duplication of cooks with the result of a very uniform pulp.

A very interesting discussion followed each section of the lecture.

Those in Attendance

Among those present were: Francis Allard, Green Bay, Wis.; E. P. Arpin, Jr., Neenah, Wis.; M. J. Auchter, Green Bay, Wis.; W. R. Barber, Camas, Wash.; Paul Buchanan, Appleton, Wis.; D. S. Brown and M. A. Buchanan, Appleton, Wis.; W. H. Burns, Appleton, Wis.; C. J. Christiansen, Manitowoc, Wis.; N. H. Christian, Port Edwards, Wis.; W. C. Christensen, Green Bay, Wis.; D. W. Choate, R. C. Crain, Port Edwards, Wis.; H. C. Crane, Appleton, Wis.; H. G. Crane, Appleton, Wis.; H. C. Crandall, Mosinee, Wis.; H. G. Davis, Combined Locks, Wis.; H. P. Dixson, Appleton, Wis.; M. L. Downs, Kaukauna, Wis.; A. E. Erspamer, Appleton, Wis.; G. B. Estey, Appleton, Wis.; A. T. Gardner, Combined Locks, Wis.; W. B. Giese, Green Bay, Wis.; J. H. Graff, Appleton, Wis.; C. M. Green, Mosinee, Wis.; W. S. Grimes, Menasha, Wis.; C. A. Gruber, Aurora, Ill.; H. A. Hauff, Longview, Wash.; W. F. Holzer, Appleton, Wis.; K. F. Horan, Green Bay, Wis.; A. Hyttinen, Appleton, Wis.; C. S. R. Johnson, Kimberly, Wis.; G. Johnston, Appleton, Wis.; W. A. Johnson, Green Bay, Wis.; P. E. Jones, Combined Locks, Wis.; P. H. Keck, Neenah, Wis.; M. J. Ketter, Green Bay, Wis.; G. A. Koebkj, Manitowoc, Wis.; F. X. Kreiling, Kaukauna, Wis.; G. H. Krohn, G. Lemwander, Appleton, Wis.; H. P. Madsen, Appleton, Wis.; N. L. Malcove, Green Bay, Wis.; H. Martin, Kalamazoo, Mich.; J. M. McAlear, Chicago,

Ill.; W. M. McGraw, Milwaukee, Wis.; R. E. Minahan, Green Bay, Wis.; M. V. Moesherry, Wisconsin Rapids, Wis.; C. R. Morse, Stevens Point, Wis.; L. A. Moss, Stevens Point, Wis.; R. A. Nugent, A. C. Olejnuzah, Green Bay, Wis.; H. C. Olson, Milwaukee, Wis.; W. J. Plank, Appleton, Wis.; D. C. Porter, Kimberly, Wis.; T. R. Probst, Appleton, Wis., R. L. Rapp, Green Bay, Wis.; C. A. Richardson, Appleton, Wis.; V. A. Rothermel, Milwaukee, Wis.; R. L. Shaw, Milwaukee, Wis.; H. K. Sheldon, Green Bay, Wis.; L. E. Simerl, Appleton, Wis.; J. A. Staidl, Kaukauna, Wis.; A. H. Stanton, Boston, Mass.; W. H. Swanson, Neenah, Wis.; I. R. Valentine, Jr., Appleton, Wis.; M. Van de Laarschot, Green Bay, Wis.; R. W. Van Kirk, Jr., Cedar Rapids, Iowa; W. Vinhagen, Green Bay, Wis.; T. H. Voigtman, Neenah, Wis.; J. P. Weidner, Green Bay, Wis.; C. J. West, Appleton, Wis.; C. J. West, Jr., Green Bay, Wis.; P. H. West, Kaukauna, Wis.; N. F. Wilmot, Chicago, Ill.

Delaware Valley TAPPI Discusses Water Treatment

The first meeting of the new season of the Delaware Valley Section of the Technical Association of the Pulp and Paper Industry met at the Engineer's Club in Philadelphia, Friday evening, October 14th with C. M. Connor presiding.

A program committee was inaugurated with the following members: Chairman—H. H. Hanson, W. C. Hamilton & Sons, Miquon, Pa.; Co-Chairman—J. F. Halladay, Container Corporation of America, Manayunk, Pa.; R. M. Bates, Thos. Royal Company, Philadelphia; A. M. Cooper, Westinghouse Electric and Manufacturing Company, Philadelphia; Paul Koenig, P. H. Glatfelter Co., Spring Grove, Pa.; G. E. Landt, Continental Diamond Fibre Company, Bridgeport, Pa.; R. F. Nelson, Glassine Paper Company, Conshohocken, Pa.; J. Carl Schmidt, Dupont Company, Philadelphia; E. T. Street, Downingtown Manufacturing Company, Downingtown, Pa.; Mr. Marshall, Mathieson Alkali Company, New York, N. Y.

The principal speaker was Christian Siebert, chief engineer of the Industrial Water Waste Disposal Committee of Pennsylvania.

Mr. Siebert mentioned that the old law for stream pollution carried provisions for treatment through common law courts, and read passage from the new Pennsylvania law, the old being very seldom used. Present policy of the Sanitary Water Board has changed in that it no longer worries about keeping on friendly terms with industry but is determined to clear refuse dumping from industry.

Mr. Siebert outlined briefly the duties of the Committee under the new law and then explained the New York-New Jersey-Pennsylvania-Delware agreement regarding the standards of purity for the Delaware River.

First standards on paper mill waste, by C. M. Baker, discharge should not be more than 20,000 gallons per ton of water and not higher than 20 pounds per thousand gallons of suspended material. This first standard included nothing of B. O. D. requirements.

Present standards are based on B. O. D. The committee has now aimed to reduction of B. O. D. requirements of paper mill waste by 85 per cent.

Mr. Siebert read some figures of B. O. D. taken from paper mill effluent, and they varied from 80 to 460. By passing these waters through filter paper B. O. D. was reduced from 30 to 80 per cent. He then read some figures from representative mills giving gallons/tons and mentioned for conclusion to make it possible for mills to reduce their wastes to meet the law, towards which there are two principal steps (1) reduce gallonage/ton of product (2) reduce volatile suspended solubles per ton to minimum. This will automatically reduce B. O. D. The attainable pounds B. O. D. per ton of product is probably 5 to 10 pounds per ton of product. Adka reduced B. O. D. in one installation by 67 per cent.

A very interesting discussion followed this talk.

Those in Attendance

Those present were: G. C. Walton, Downingtown, Pa.; J. F. Halladay, Manayunk, Pa.; H. O. Ware, Kalamazoo, Mich.; J. C. Kieffenderfer, Wilmington, Del.; Craig Maxwell, Manayunk, Pa.; F. P. Lasseter, New York City; F. B. Watkins, Harrisburg, Pa.; Frank W. Varden, Philadelphia, Pa.; Robert F. Nelson, W. Conshohocken, Pa.; C. L. Siebert, Harrisburg, Pa.; H. H. Hanson, Miquon, Pa.; James d'A. Clark, Chester, Pa.; H. F. Hoffman, Philadelphia, Pa.; A. M. Cooper, Philadelphia, Pa.; Ward Harrison, Milford, N. J.; J. M. Tuttle, W. Conshohocken, Pa.; A. Shnabel, Lansdowne, Pa.; Dr. R. Engel, Lansdowne, Pa.; V. Jacobsen, Philadelphia, Pa.; John Roslund, Philadelphia, Pa.; L. Justice, W. Conshohocken, Pa.; C. M. Connor, Conshohocken, Pa.; J. D. Davis, Philadelphia, Pa.; R. W. Kumler, Wilmington, Del.; J. C. Schmidt, Philadelphia, Pa.; L. M. Booth, Elizabeth, N. J.; W. E. Brow, Manayunk, Pa.; A. E. Waugh, Philadelphia, Pa.; J. J. Lafferty, New York City; E. I. Stokes, New York City; Walter P. Quinn, New York City; Paul Koenig, Spring Grove, Pa.; J. C. Shaw, Manayunk, Pa.; R. W. K. Ulm, Manayunk, Pa.; E. T. Street, Downingtown, Pa.; E. J. Albert, Philadelphia, Pa.; Sam Reynolds, Manayunk, Pa.; R. T. Bingham, New York City; J. H. Fritz, Harrison, N. J.; W. M. Shoemaker, Yorklyn, Del.; H. C. Speel, Wilmington, Del.; P. M. Loddengaard, New York City; R. Tutt, Jr., Philadelphia, Pa.; P. J. Stuart, Philadelphia, Pa.; R. Gavin, Coatesville, Pa.; Chas. L. Ellis, Downingtown, Pa.; F. J. McAndrews, Manayunk, Pa.; C. W. Revise, Philadelphia, Pa.; Alex McInnes, Jr., Wilmington, Del.; Chas. McDowell, Manayunk, Pa.; S. M. Bratton, Wilmington, Del.; Chas. A. Shubert, Philadelphia, Pa.

Central Paper Co. Nets $62,424

The Central Paper Company, Inc. report as follows for the year to June 30: Net income $62,424, equal after preferred dividends to 14 cents each on 145,578 common shares, compared with $326,309, or $2 a share on common in preceding fiscal year.

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COMING EVENTS IN THE PAPER INDUSTRY

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Nonotuck Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—Second Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

CONFIDENCE AND COOPERATION

It is quite generally agreed by both business and governmental economists that industry and trade is improving and that a recovery from the low tide of activity in the current year is now in progress. According to the Federal Reserve Board the index of industrial production rose above 90 per cent of the 1922-25 average during September, compared with 88 in August and 76 in May at the low point of the depression. By the first of January 1939 government economists expect a level of 100 will be reached. This production has increased employment. In August factory employment increased about 5 per cent, 320,000 new workers were hired and payrolls increased about 9 per cent or $12,000,000 weekly. Further gains are predicted but some dissenting minds assert that nothing more than a temporary revival of prosperity can be expected while the retarding influences of various features of the New Deal continue in effect. The road to the attainment of a substantial and permanent prosperity is not a broad, smooth highway but such obstacles that exist are by no means insurmountable and a hint to a solution may be found in the mistakes made in the past.

Some doubt is expressed by prominent business men if an administration which has revealed its weakness for various panaceas, may not continue its socialistic experiments in an attempt to lift the country up by its boot straps. The latest plan of the Secretary of Agriculture is possibly an indication of the trend for more experimentation in regimentation of industry and trade. The sentiment for some form of price-fixing is attracting much attention at Washington and President Roosevelt is believed to be in sympathy with it. The possibility of having more and more restrictions imposed upon business may be the reason why business is reluctant to accept the Administration's invitation to cooperate with the Government. The President has recently expressed the opinion that business should stop its "sabre rattling" and cooperate with the Administration on, presumably, the President's own terms which means, of course, the acceptance of the particular policy and much of the peculiar, undemocratic philosophy which has become a part of the New Deal. But business continues to hesitate while the more optimistic hope that the latest appeals to a recalcitrant business world may result in some cooperative action between Government, business and labor to speed recovery and to sustain prosperity at the high level the ample resources and managerial ability of the country can unquestionably attain.

Meanwhile, business recalls the predicted turning point under the New Deal three years ago, when President Roosevelt said a "breathing spell" for business was at hand. Like predictions followed in 1936, in 1937 and again early in this year, but none of these predictions have materialized. The record shows that several years ago, Roy W. Howard, newspaper publisher, wrote to the President: "There can be no real recovery until the fears of business have been allayed through the granting of a breathing spell to industry, and a recess from further experimentation until the country can recover the losses." To this the President replied that his basic program had "reached substantial completion and the breathing spell of which you speak is here—very decidedly so". Encouraging words, but the ensuing Congress pressed ahead with legislation hampering and objectionable to business, and Government, and labor continued its attacks on business.

"What we have every reason to contemplate for the future," wrote Alfred P. Sloan Jr., chairman of the General Motors Corporation, in a letter sent on June 3, 1938 to common stockholders, "through evolution, is a Federal bureaucracy determining, according to its own beliefs, and certainly with an eye to the political consideration, the conditions under which goods of every kind may be produced in any State, and enforcing those conditions by preventing the shipments of such goods outside the borders of any State, in the event the conditions are not complied with. This is the direct road to industrial

regimentation—the substitution of the political consideration for individual enterprise. That is what industry has to contemplate."

In an address on "Can Business Controls and Democracy Go Hand in Hand", Winthrop W. Aldrich, chairman, the Chase National Bank of the City of New York, at the fortieth anniversary of Northeastern University, in Boston, Mass., October 3, said in part: "The enemy of the enterprise system is planned economy, just as the enemy of democracy is authoritarian government. As a matter of fact, and I call to witness the examples of authoritarian governments now operating in the world, a planned economy cannot function except under an authoritarian state. . . . Between a rigid system of planned economy and the flexible system of free economy such as we had, for example, in the early years of this century, there is a vast field within which controls by government can be exercised . . . The most important question before the American people today is this: To what extent is it desirable, in particular fields or more generally, for the government to exercise controls over the enterprise system? It goes without saying that if the controls are to work to the benefit of the country, the remedies must not be worse than the ills they are designed to correct . . . The normal incentives to enterprise and production which have been so long native to our race must not be destroyed, whether by governmental regulations, governmental competition or such unmanageable governmental expenditures as will result in either an impossible tax burden or bankruptcy of the Government".

In the interests of national recovery the Administration asks for the cooperation of business. But cooperation cannot be obtained when one party lacks confidence in the other. Business lacks confidence in the Administration because it distrusts many of the policies of the New Deal. The Administration complains that business men make "extravagant statements and misrepresentations of Government policies". In the denunciations of business by Secretary Ickes and Assistant Attorney General Jackson last December, business was unquestionably under bitter attack. The use of words of such sportive familiarity as economic royalist, reactionary and Tory have not increased the confidence of many business men in the soundness of spending for prosperity. And it is true that the Federal tax burden has been increased from $2,080,000,000 in 1933, to $6,242,000,000 in the fiscal year 1938. And it is also true that in the absence of any unequivocal pledge by the President that the TVA does not intend to establish regional equivalents of the Tennessee Valley Authority all over the country, that there exists a 2½ billion utility building deficit. According to the report of the Committee of Utility Executives utility construction in the last five years lags by 67 per cent. This is blamed on the Administration's punitive policy toward the utility industry, "which has so frightened capital that it has proved impossible to finance most of the needed construction. Thus a vast untapped reservoir of jobs outrivaling the programs of PWA and WPA awaits release", said the committee. "It is a privately financed recovery measure that will cost the taxpayers nothing and add billions to the taxable wealth of the nations."

Cooperation between Government, business, and labor is plainly essential to achieve a high and permanent level of prosperity. All parties must meet with open minds and until that fairness of purpose is reached the capacity of industry and trade must remain far below its potential activity, the slack of unemployment taken up slowly and the national income fall below what we have every reason to expect it to be, in round figures $90,000,000,000 to $100,000,000,000.

Production Ratio Report

These statistics are based upon paper production reports to the American Paper and Pulp Association.

COMPARATIVE MONTHLY SUMMARIES

Months	1938(c)	1937(c)	1936	1935	1934
January	63.9%	90.3%	76.1%	65.8%	.....
February	68.7%	90.1%	77.9%	70.0%	.....
March	69.6%	90.3%	76.0%	70.5%	.....
April	68.3%	92.1%	82.3%	70.0%	.....
May	69.0%	90.6%	81.6%	69.4%	.....
June	66.0%	87.3%	80.7%	72.3%	.....
July	72.0%	81.8%	77.3%	64.9%	.....
August	77.2%	82.9%	81.5%	70.9%	.....
September	76.3%	78.6%	80.5%	71.9%	58.2%
October	.....	73.5%	87.6%	75.6%	64.7%
November	.....	61.9%	88.0%	75.3%	61.7%
December	.....	54.5%	85.9%	71.2%	59.6%
Year Average	.....	80.6%	81.3%	70.5%	.....
First 40 weeks	70.3%	86.6%	79.6%	69.6%	.....

COMPARATIVE WEEKLY SUMMARIES

CURRENT WEEKS, 1938		CORRESPONDING WEEKS, 1937	
*September 3	77.5%		
*September 10	66.0%	September 4	80.7%
*September 17	79.7%	September 11	68.7%
*September 24	78.6%	September 18	82.7%
*October 1	81.0%	September 25	81.9%
*October 8	83.0%	October 2	79.1%
		October 9	77.0%

The following statistics show the number of mills reporting by ratio groups:

	Number of Mills Reporting, Current Weeks					
Ratio Limits	Sept. 3, 1938	Sept. 10, 1938	Sept. 17, 1938	Sept. 24, 1938	Oct. 1, 1938	Oct. 8, 1938
0% to 50%	83	92	72	107	68	38
51% to 100%	225	216	233	193	226	134
Total Mills Reporting	308	308	305	300	294	172

* Subject to revision until all reports are received.
(c) Basic capacity data have been adjusted to correspond with ratings reported by individual companies.

Paperboard Operating Ratios

According to reports from the National Paperboard Association, per cents of operation, based on "Inch-Hours", were as follows:

Mos.	1938 (e)	1937 (e)	1936	1935	Mos.	1938 (e)	1937 (e)	1936	1935
Jan.	55%	80%	61%	61%	July	57%	67%	69%	59%
Feb.	61%	86%	67%	67%	Aug.	66%	74%	75%	65%
Mar.	60%	87%	68%	67%	Sept.	....	70%	76%	69%
Apr.	57%	89%	70%	61%	Oct.	....	66%	82%	76%
May	58%	86%	68%	61%	Nov.	....	56%	79%	70%
June	56%	75%	68%	65%	Dec.	....	46%	74%	60%

Week end. Sept. 3, 1938—67%
Week end. Sept. 10, 1938—57%
Week end. Sept. 17, 1938—71%
Week end. Sept. 24, 1938—68%
Week end. Oct. 1, 1938—69%
Week end. Oct. 8, 1938—70%

(e) Basic figures revised to include new members of the National Paperboard Assn.

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Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

Review Of The Paper Industry Literature

Abstracts Compiled By the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson, C. E. Peterson and Clarence J. West, Chairman.

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C. for 10 cents each. Send currency, not stamps.

Drying

Device for Synchronizing the Speeds of the Driers and Reel of a Paper Machine. Papeteries Navarre. Fr. pat. 822,659 (June 4, 1937).—The reel and driers, respectively, drive the planetary gears of a differential which controls and operates the driving shaft of the reverser of a small motor-reducer connected to the worm of the guide which controls the position of the belt on the cone-pulleys of the reel.—A.P.-C.

More Uniform Rolls on Drum Reels. A. M. Cooper. Paper industry 19:1402-1403 (March, 1938).—A description of a simple magnet regulator constructed by Westinghouse Electric and Manufacturing Co. and used to maintain constant tension on the drum reel section of paper machines.—A.P.-C.

Device for Emptying the Condensate from Steam Heated Dryer Cylinders. Walmsleys Ltd. Bury, England. Ger. pat. 646,372 (Jan. 24, 1935).—Scoops are fastened to the inside of the dryer shell and the water thus gathered up is dumped into a trough within the dryer and near the top.—J.F.O.

Device for the Drying or Moistening of Hanging Material, Especially Flat Material Such as Board and Similar Materials. Tromag Trockenapparate und Maschinenbau G.m.b.H., Hersfeld. Ger. pat. 647,027 (Nov. 9, 1934).—Concerns the arrangement of ventilators in a drying chamber.—J.F.O.

Pulp and Paper Testing

Pulp for Rayon Manufacture. Gustavus J. Esselen and Martin H. Gurley, Jr. Paper Industry 19: 1395-1397 (March, 1938).—A general discussion of the quality requirements of rayon grade pulp and of the tests used for evaluating it.—A.P.-C.

The Quality of Chemical Pulp. C. K. Giller. Bumazhnaya Prom. 15, no. 1:32-36 (April 1937); Chimie & Industrie 39,136 (Jan. 1938).—A brief discussion of the methods of evaluating the quality of pulps. The chlorine value is considered to be the most suitable chemical test, while for the mechanical properties the best procedure is to prepare a sheet from the pulp and determine the mechanical properties of the sheet.—A.P.-C.

Changes In the Thickness-Swelling Volume of Pulps During Technical Processing. Georg Jayme and Rudolf Steinmann. Papier-Fabr. 35, No. 36/37: 337-60; No. 38: 361-64 (Sept. 8, 15, 1937).—A knowledge of the swelling properties of pulps is a necessity for its evaluation and processing. On the swelling properties of pulps depends: its hygroscopicity, speed of water absorption in an air conditioned room, water-binding possibilities, beating possibilities, resistance to attack of the finished paper by acids, speed of reaction with alkalies and oxygen, speed of esterification, and speed of drying. By means of fifty-five references to the literature, numerous curves and tables, the authors present a very comprehensive research on the subject. The main divisions of the article are as follows: dilatometer method for determining swelling, hygroscopicity, hydrolyzing difference, metal hydroxide absorption, dyestuff absorption, Roentgenographic measurements, water-binding possibilities, microscopical-optical methods, moistening heat, concentration changes in the swelling medium, dielectrical measurements, solubility, dilution and concentration series, changes in length, immersion method and swelling medium absorption, evolution of the term thickness-swelling volume, influence of pressure, basis weight, degree of beating, refining treatment both cold and hot, swelling of pulps in various mediums and in sodium hydroxide of various concentrations, swelling of cotton board, changes in the swelling possibilities of pulps through acid treatment, changes in the thickness-swelling volume of pulp in bleaching and changes in storage. The more important facts are contained in the conclusion: such as, there is no causal relation between the viscosity and the thickness swelling volume, etc.—J.F.O.

According to What Methods Are Bleached and Unbleached Pulps Currently Controlled? Walter Brell. Z. Papier, Pappe, Zellulose, Holzstoff 56, no. 1/2:5-10 (Jan. 29, 1938); Svensk Pappers-Tidn. 41, no. 4:108-115 (Feb. 28, 1938); B. I. P. C. 8:313.—The author reviews the different chemical and physical methods for evaluating the properties of bleached and unbleached pulps which are suitable for current mill control. He describes simultaneously the purpose of each test and discusses the conclusions which may be drawn from the results.—C.J.W.

An Analytical Study of Various Pulps With Reference to Alkali Binding*

By Martin L. Downs [1]

Abstract

A series of eight commercial pulps of widely different chemical characteristics were investigated. A study of the abilities of these pulps to decrease the alkalinity of 0.005 N NaOH was made, using a direct titration method. The investigation included a study of loss of alkalinity by neutralization, exchange adsorption, and direct sorption. The pulps were analyzed for such factors as are most likely to affect the ability of pulps to bind alkali. Analysis included hygroscopic moisture, pH, total ash and its composition, pentosans, copper numbers, uronic acid, and lignins. Further tests are outlined which demonstrate the effect of changing pulp composition.

Introduction

A common characteristic of all cellulose is its ability to decrease the alkalinity of dilute aqueous solutions of sodium hydroxide. Papermaking pulps vary greatly in this ability, and to the technical worker in papermaking, in regenerated cellulose products and in allied fields a study of the phenomena should be of special interest. In many stages of wood pulp manufacture, washing to low concentrations of alkali occurs, such as in the alkaline pulping of woods or alkaline purification of acid pulps. In sizing with rosin, low concentrations of sodium hydroxide are encountered in the beater, due to the hydrolysis of sodium resinate. In modern multi-stage bleaching methods, extractions with sodium hydroxide are usually used.

In the case of highly purified pulps it has been rather definitely proved that removal of sodium hydroxide from dilute aqueous solutions is by sorption, but in the case of commercial pulps the action may be quite different, due to the relatively large quantities of organic and inorganic materials associated with the cellulose. The object of this investigation has been, therefore, to show some of the relationships which exist between pulp composition and the ability to decrease the alkalinity of low normality sodium hydroxide.

A great amount of work has been done in connection with higher concentrations of sodium hydroxide, such as those used in mercerization and the preparation of viscose, but all of it is outside the field of this study. The normality of sodium hydroxide used in this work was set at 0.005 *N*, originally selected as the equivalent of sodium hydroxide in a beater containing paper pulp at 6 per cent consistency sized with 3 per cent of sodium resinate on the air-dry weight of the pulp (*1*). As early as 1907 Viewig (*2*) made a study of the absorption of sodium hydroxide from dilute solutions. In a study made with purified cotton, Kolthoff (*3*) postulated that sodium hydroxide may be extracted from dilute aqueous solution in accordance with the law of partition. In 1925 Lorenz (*4*) made a critical study of all previous work on alkali cellulose and gave results of experiments on the action of 0.001 to 0.01 *N* sodium hydroxide on purified pulp in the form of filter paper. He concluded that a typical adsorption took place at those low concentrations. Neale (*5*) published a series of papers on the subject from 1929 to 1933 but did not extend his work to commercial paper pulps. A study by Edge (*6*) is more intimately connected with the investigation reported here. He studied the decrease in acidity and alkalinity of dilute solutions due to the presence of pulp. He found that in the case of acid solutions the decrease in acidity is generally nearly equal to the loss of alkalinity of the ash. He also found that the removal of alkali from dilute solution causes no increase in the alkalinity of the pulp ash, and therefore alkali is not taken up as such. He postulated that some organic acid in the cellulose is responsible for the loss of alkalinity of a dilute alkaline solution when pulp is introduced. He suggested that rag pulp contains no appreciable amount of this acid, kraft pulp a small amount, and sulphite pulp a considerable amount. After acid treatment he found rag pulp was easily washed neutral, while the others remained persistently acid. Edge interpreted this as indicating that sulphate and sulphite pulps contain organic acidic material which is normally masked by the alkalinity of the ash-producing ma terial present.

Bialkowsky (*1*) studied the effect of commercial papermaking fibers on dilute solutions of sodium hydroxide at concentrations equivalent to those of sodium resinate ordinarily used in the beater for sizing. He found that pulps differ greatly in their abilities to decrease the alkalinity of a dilute solution at concentrations in the range of from 0.001 *N* to 0.01 *N*; in general, as cellulosic purity increases, loss of alkalinity from a dilute solution and ease of sizing decrease. The suggestion was made that, by the removal of alkalinity by the pulp, the hydrolysis of sodium resinate to free rosin is forced to some extent in the beater.

The present investigation follows in logical sequence to Bialkowsky's work, checking again the ability of various commercial pulps to decrease the alkalinity of 0.005 *N* sodium hydroxide, determining the mechanism of such decrease in alkalinity, and correlating it with the chemical constants and constituents of the pulps studied.

Lowering of Alkalinity of Pulp Fibers

Eight commercial pulps of widely different character were used in the investigation. They were:

Spruce groundwood
Unbleached jack pine kraft
Semibleached jack pine kraft
Unbleached hemlock Mitscherlich sulphite
Unbleached spruce quick-cook sulphite
Bleached spruce quick-cook sulphite
Purified sulphite pulp (Alpha)
No. 1 muslin half stock

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* Presented by title at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Waldorf-Astoria Hotel, New York, N. Y., Feb. 21-24, 1938.
A portion of a thesis submitted in partial fulfillment of the requirements of The Institute of Paper Chemistry for the degree of Doctor of Philosophy from Lawrence College, Appleton, Wisconsin, June, 1934.

[1] Member TAPPI, Thilmany Pulp & Paper Co., Kaukauna, Wis.

For the study of their chemical constants and for the work in connection with the study of their abilities to reduce the alkalinity of a dilute solution, the pulps were air dried, shredded in a Gosta Hall disintegrator and stored in glass jars. In making the determinations all per cents were calculated on the basis of over-dry pulp; the samples were weighed air dry, corrections being made for moisture to give exact oven-dry weights.

For determining the alkalinity-reducing ability, the following procedure was used:

Ten-gram samples of shredded pulp were placed in Erlenmeyer flasks of 500-cc. capacity. To each was then added a 250-cc. portion of approximately 0.005 *N* carbonate-free sodium hydroxide which had been standardized against 0.005 *N* sulphuric acid, using phenolphthalein as an indicator. This gave a pulp consistency of 4 per cent. The flasks were closed with good quality red rubber stoppers, thoroughly shaken, and then kept in a water bath at 20 deg. C. for a period of 30 hours. At the end of that time the fibers were filtered on a bare Buechner funnel, the filtrates being poured through the fiber mat twice to give clear filtrates. The normalities were then redetermined by titrating at 20 deg. C. with 0.005 *N* sulphuric acid, using phenolphthalein as an indicator. Losses in alkalinity were calculated from the original and final normalities.

Table I gives the results of these measurements on the group of pulps.

TABLE I—LOWERING OF ALKALINITY OF 0.005 *N* SODIUM HYDROXIDE BY COMMERCIAL PULPS AT 4 PER CENT CONSISTENCY

Pulp	Loss in Alkalinity Percent
Groundwood	97.2
Semibleached kraft	86.8
Bleached sulphite	84.7
Unbleached sulphite	84.1
Unbleached Mitscherlich	77.9
Unbleached kraft	67.1
Alpha pulp	19.4
No. 1 muslin	16.5

To determine whether or not sodium hydroxide was being removed by sorption on the pulps or by exchange adsorption with the ash constituents, the following tests were made. Samples of 450 grams each of the unbleached kraft and unbleached Mitscherlich pulps were treated with 0.005 *N* sodium hydroxide exactly as were the 10-gram samples listed in Table I, with the exception that, after being filtered on the Buechner funnel, they were washed with 100 cc. of distilled water per gram of pulp. The final wash water was neutral to phenolphthalein; 10-gram samples of these treated pulps, soaked in 250 cc. of distilled water at 20 deg. C. for 30 hours, gave filtrates which were neutral to phenolphthalein. These 450-gram samples were then air dried and ashed.

TABLE II.—ASH ANALYSIS ON PULPS BEFORE AND AFTER TREATMENT WITH 0.005 *N* NaOH

	Unbleached Kraft		Unbleached Mitscherlich	
	Untreated	Treated	Untreated	Treated
Ash in oven-dry pulp.....	0.719%	0.693%	0.514%	0.447%
Analysis of Ash				
Silicia	11.93	11.66	6.52	5.09
R_2O_3	7.47	7.02	2.43	2.38
Calcium oxide	45.87	44.63	40.52	40.91
Magnesium oxide	15.64	18.83	12.96	16.33
Sulphur trioxide	7.57	6.21	28.51	27.69
Estimated combinations				
Silica and R_2O_3.....	19.40	18.68	8.95	7.47
Calcium sulphate	12.36	10.12	46.66	45.22
Calcium oxide	41.05	40.68	22.37	23.29
Magnesium oxide	15.64	18.83	12.96	16.33
Undetermined	11.52	11.65	9.06	7.59
On Basis of oven-dry pulp				
Silica	0.086	0.081	0.033	0.023
R_2O_3	0.054	0.049	0.013	0.011
Calcium oxide	0.295	0.282	0.115	0.104
Calcium sulphate	0.089	0.071	0.240	0.202
Magnesium oxide	0.112	0.131	0.066	0.073
Undetermined	0.083	0.081	0.047	0.034
Total	0.719	0.693	0.514	0.447

Analyses were made of the ash from these treated stocks and of the ash from the stocks before being treated. The method of analysis was that as outlined in Treadwell and Hall (*7*) and calculated as suggested by Griffin (*8*). The values given are the averages of check analyses, which were in good agreement. The results of this work are given in Table II. All analyses showed only a trace of chlorine.

The results of these ash analyses indicated that no appreciable exchange adsorption was taking place and that no appreciable amount of alkali was retained by the washed pulp. A loss of original alkalinity of 10 per cent from the 0.005 *N* sodium hydroxide by exchange adsorption between the calcium in the pulp ash and the sodium from the solution would result in a drop of about 9 per cent in calcium oxide in the ash analysis. Similarly, a loss of only 10 per cent by retention of the sodium hydroxide by the pulp would result in an increase of about 8 per cent in undetermined constituents in the ash analysis. The actual changes in the ash as shown by the analysis were but slight, and it can be said that the possibility of much loss of alkalinity under these conditions by exchange adsorption is negligible. Direct sorption by the pulp may have taken place, but if so, it was not firmly held and was removed during the final washing.

When determining the loss of alkalinity after pulp has been immersed in the dilute alkali, the end point of the titration of the alkaline filtrate with sulphuric acid (using phenolphthalein) gives indication that the solution is buffered, and that some alkalinity has in all probability been lost by neutralization, likely by organic constituents from the pulp.

Further, it was found that the clear filtrates from the wood pulps, after being treated with alkali, continued to decrease in alkalinity even after being removed from the pulps and stored in carbon-dioxide-free stoppered flasks at room temperature. This further indicated the formation or presence of organic acidic constituents which reduce the available alkalinity of the solutions. To confirm this indication that acid substances were present, the filtrates from the treatments of the pulps with 0.005 *N* sodium hydroxide were tested as follows for the presence of organic acids.

Samples of 200 cc. of clear filtrates were acidified with sulphuric acid so as to bring them to an acid concentration of about one per cent. They were then distilled, using a Kjeldahl trap to prevent the entrainment of sulphuric acid, until 125 cc. were collected. Tests showed these distillates to be free of sulphates. A 25 cc. sample of each distillate was titrated with 0.005 *N* sodium hydroxide to prove the presence of acids and the remaining 100 cc. of each distillate was redistilled, each 10 cc. of distillate being titrated with the standard alkali to determine the rate of distillation of the acid and yielding Du Claux constants (*9*) by means of which the organic acids might be identified.

The filtrates from all the pulps except Alpha and No. 1 muslin showed the presence of organic acids. The distillates from the kraft filtrates showed no Du

Claux constants which could be satisfactorily identified as the constant for any single acid, but the filtrates from the groundwood and sulphite pulps gave definite Du Claux constants corresponding to acetic acid. The conclusion can safely be drawn that some loss of alkalinity in the case of the common wood pulps does take place by neutralization, as was postulated by Edge (*6*), and that rag pulp does not show this effect of acid constituents. The following work also checks this.

A test was made to trace the disappearance of all the alkali on a run with 10-gram samples of pulp in 250 cc. of 0.005 *N* alkali. The runs were made as were those for the results in Table I, except that here the pulps were washed with a liter of distilled water after the filtrates were removed. The previous work on ash analysis demonstrated that this much wash water was sufficient to remove all sodium hydroxide. The filtrate volume was 210 cc., leaving 40 cc. of the original 250 cc. retained mechanically on the pulp, since the last 40 cc. could not be removed by suction on the Buechner funnel. This 40 cc. of retained alkali was, of course, taken off by the washing process. The alkalinity of the filtrate was determined in two ways; a 25 cc. sample was titrated directly with 0.005 *N* sulphuric acid, using phenolphthalein as an indicator, and another 25 cc. sample was acidified with a known volume of standard sulphuric acid, evaporated to a small volume to drive off organic acids and then back titrated with 0.005 *N* sodium hydroxide. The difference between the two titrations gave the alkalinity masked by the organic acids present in the filtrate. The same was done with the wash water, using 100 cc. samples and correcting for the blank on 100 cc. of carbon dioxide-free distilled water handled in the same manner. The values secured for the wash water were corrected for the 40 cc. of the original filtrate retained on the pulp, so that sorption could be estimated. Naturally at these low concentrations end points are not exact, but the balance gives a good approximation of how all the alkalinity disappears. The results are given in Table III.

TABLE III.—BALANCE OF TOTAL ALKALI—PULPS TREATED WITH 0.005 N SODIUM HYDROXIDE AT 4 PER CENT CONSISTENCY

Per cent of Original Alkali	Unbleached Kraft	Unbleached Mitscherlich
Free in filtrate	33.0	22.1
Combined in filtrate	34.1	47.1
Free, sorbed on pulp	16.7	16.5
Combined, sorbed on pulp	17.3	22.6
Total	101.1	102.3

These balances indicate that wood pulp reduce the alkalinity of a dilute solution both by neutralization and by sorption. The free and neutralized alkali sorbed by the pulp is not closely bound and is easily washed out. This was confirmed by the previous ash analyses. The rag pulp and purified wood pulp evidently remove alkali only by a sorption which is easily broken on washing.

A series of tests were then made to determine what effect repeated treatments with dilute alkali would have on the ability of the pulps to reduce alkalinity. The 10-gram samples of pulp were treated as were those listed in Table I. After being treated with alkali and filtered they were washed with a liter of distilled water, air dried, and the operation repeated, using a fresh portion of 0.005 *N* alkali. The loss of alkalinity upon each treatment was determined by direct titration as in Table I. The results are given in Table IV.

The filtrates from the fourth treatments, when tested for organic acids, showed the presence of acid definitely only in the case of groundwood. Table IV shows that groundwood is the only pulp whose ability to decrease alkalinity is still dropping off at an appreciable rate; apparently, materials causing neutralization are still being removed by the dilute alkali. In the case of Alpha and Muslin, repeated treatments had little effect on the ability of the pulps to decrease alkalinity, and it is very likely that only sorption takes place on such purified pulps. The absence of organic acids in the filtrates from those pulps confirms that belief. In the case of other pulps, loss of alkalinity decreased on repeated treatments, due to the removal of neutralizing material. It will be noted in Table IV that the losses for the third and fourth treatments are almost the same, and it is likely that the final values represent the losses by sorption alone, since no further change is taking place and the filtrates show no organic acids.

TABLE IV.—PER CENT LOSSES OF ORIGINAL ALKALINITY UPON REPEATED TREATMENTS WITH 0.005 N SODIUM HYDROXIDE

Pulp	Per Cent Loss of Alkalinity on Successive Treatments 1	2	3	4
Groundwood	97.2	94.0	88.9	81.3
Semibleached kraft	86.8	42.9	33.9	32.6
Bleached sulphite	84.7	45.5	25.9	26.8
Unbleached sulphite	84.1	52.8	43.4	38.2
Unbleached mitscherlich	77.9	52.6	43.8	39.1
Unbleached kraft	67.1	45.5	44.2	44.3
Alpha pulp	19.4	15.0	17.6	21.7
No. 1 muslin	16.5	13.3	13.3	13.3

Chemical Constants of Pulps and Lowering of Alkalinity

In order to ascertain if the ability of a pulp to decrease the alkalinity of a dilute solution could be correlated with the constants of the pulp, the following determinations were made.

Hygroscopic moisture was determined by drying at 105 deg. C. to constant weight samples of pulps which had been seasoned in a room at 65 per cent relative humidity and 70 degrees F. for 24 hours.

The aqueous extracts of the pulps were prepared by soaking 10-gram samples in 250 cc. of distilled water at 20 deg. C. for 30 hours, filtering on a bare Buechner funnel, and pouring the filtrate through the fiber mat to give clear filtrate. These filtrates were then tested colorimetrically for *p*H.

The acidity or alkalinity of these aqueous extracts was determined by titrating with 0.005 *N* sodium hydroxide or sulphuric acid, using phenolphthalein as an indicator.

Ash was determined by igniting 5-gram oven dry samples and weighing the residue.

Copper numbers were determined by the method as outlined by Burgen and Minor *(10)*.

Pentosans were determined by Method 45 of the Forest Products Laboratory (*11*).

Uronic acid anhydrides were determined by the method as adapted by Dickson, Otterson, and Link *(12)*, using a 5-gram sample of pulp and adding a bit of paraffin to the reaction flask to prevent excessive foaming.

Lignin was determined by the modified Forest Products Laboratory method (*13*), without extracting the pulp samples before making the determinations.

Table V gives the results of the analyses of the pulps and their alkali binding power.

The list of chemical constants of the pulps shows no characteristic, with the possible exception of

TABLE V.—CHEMICAL CONSTANTS OF PULPS

Pulp	Alkali Binding as per cent of 0.005 *N* NaOH	Aqueous Extract *p*H Water = 6.8	Aqueous Extract Alkalinity in cc. 0.005 N H_2SO_4 per 100 cc.	Per Cent Ash as Ignited CO_2 Free	Per Cent Pentosans	Copper Number	Per Cent Uronic Acid Anhydride	Per Cent Lignin
Groundwood	97.2	6.3	—1.00	0.306	12.81	3.13	2.25	28.62
Semibleached kraft	86.8	7.3	...	1.320	10.41	2.59	0.62	2.26
Bleached sulphite	84.7	7.1	0.00	0.617	6.28	2.49	0.88	0.71
Unbleached sulphite	84.1	5.2	—4.00	0.318	5.58	2.43	0.42	2.36
Unbleached Mitscherlich	77.9	6.7	0.00	0.512	4.08	2.82	0.53	2.94
Unbleached kraft	67.1	7.5	0.60	0.719	10.48	1.01	0.79	4.54
Alpha pulp	19.4	6.8	0.40	0.171	4.47	0.61	0.60	0.61
No. 1 muslin	16.5	7.4	0.80	0.131	....	0.16	0.14	....

copper number, which can be correlated with the abilities of the pulps to decrease the alkalinity of a very dilute sodium hydroxide solution. Groundwood, because of its high degree of lignification, naturally shows up as impure by the usual tests and it is also first in ability to decrease alkalinity. Alpha and muslin, which are shown by analysis to be of high purity, are low in ability to decrease alkalinity. Aside from these two extremes, the group of five chemical pulps have no constants in absolutely the same order as their abilities to decrease alkalinity.

In the opinion of some investigators, hygroscopic moisture is a general index of the relative purity of pulps. Again it may be said that groundwood with high ability to decrease alkalinity shows a high degree of impurity by the measurement of hygroscopic moisture and Alpha and Muslin similarly show high purity and low ability to decrease alkalinity, but in the middle group of pulps no good distinction can be made as to general purity and loss of alkalinity.

It is evident that the *p*H of the pulp has no direct bearing on its ability to decrease alkalinity, and the total acidities or alkalinities of the pulps show that loss of alkali is not taking place in proportion to the direct abilities of the pulps for neutralization; the titratable acidities or alkalinities are low in every case, except the unbleached sulphite, which probably shows appreciable acidity due to incomplete washing after the pulping operation.

As the previous ash analysis work would lead us to believe, no correlation between ash content and ability to decrease alkalinity can be shown.

It may be of some significance that the copper number and ability to decrease alkalinity fall in about the same order, unbleached Mitscherlich being the only exception. However, no direct mathematical relationship between the two factors can be drawn. The copper number of a pulp is a measure of its reducing power and its ease of oxidation. It is possible that pulps which oxidize more readily can produce more acid bodies and therefore copper number and loss of alkalinity bear some relationship.

The fact that the uronic acid content of pulps bears no relationship to their abilities to decrease alkalinity is shown by the values in Table V. Alpha pulp with a uronic acid anhydride content much the same as the other chemical wood pulp has a low ability to remove alkali from a dilute solution.

Although the lignin contents bear no apparent relation to the *original* abilities of the pulps to bind alkali, there is an interesting relationship with the values given in Table IV. It was previously mentioned that column four in Table IV, the loss of alkalinity after four treatments with 0.005 *N* sodium hydroxide, probably represents the abilities of the pulps to sorb alkali after neutralizing materials have been almost completely removed. Comparison of these residual alkali sorbing values shows them to be in the same order as the lignin contents of the pulps, as shown in Table VI.

TABLE VI.—A COMPARISON OF LIGNIN CONTENTS AND RESIDUAL ABILITIES OF PULPS TO SORB ALKALI FROM 0.005 N NaOH

Pulp	Lignin Per Cent	Decrease in Alkalinity Per Cent
Groundwood	28.62	81.3
Unbleached kraft	4.54	44.3
Unbleached Mitscherlich	2.94	39.1
Unbleached sulphite	2.36	38.2
Semibleached kraft	2.26	32.6
Bleached sulphite	0.71	26.8
Alpha pulp	0.61	21.7
No. 1 muslin	....	13.3

While no direct relationship can be drawn between lignin content and the original ability of a commercial pulp to remove alkali from a dilute solution, it is evident that a more highly lignified pulp can sorb more alkali than a less lignified pulp.

Effect of Altering Pulp Composition on Alkali Binding

The chemical constants listed in Table V include all those most likely to exert some influence on the ability of a pulp to decrease alkalinity. To check the conclusions reached by merely listing the constants for a group of pulps, the following tests were made in order to determine how an alteration in pulp composition would affect its alkali removing power.

The ash content of samples of pulp was reduced by electrodialysis, treating the pulp for several hours in a 4 per cent suspension by means of direct current of about one ampere at 140 volts between flat carbon electrodes. The pulp was kept agitated between cloth diaphragms and a small stream of distilled water was used to carry away the salts removed. After being electrodialyzed, the pulps were filtered, air dried, and tested for their alkali binding power as previously described. Table VII gives the results of this work.

TABLE VII.—EFFECT OF REDUCING THE ASH CONTENT ON THE ABILITY OF PULPS TO REDUCE THE ALKALINITY OF 0.005 N SODIUM HYDROXIDE

Pulp	Ash Per Cent	Loss in Alkalinity Per Cent
Original unbleached kraft	0.719	67.1
Dialyzed unbleached kraft	0.420	71.4
Original semibleached kraft	1.320	86.9
Dialyzed semibleached kraft	0.520	83.2

The changes in ash content have little effect on loss of alkalinity. This confirms the previous work on ash analysis and on observations made when examining the constants of the pulps.

The pentosan content of the pulps was reduced by a method used by Browning (*14*). Pulp was stirred for one hour with sufficient 8 per cent sodium hydroxide solution to give a consistency of 4 per cent of pulp; the temperature of the suspension was maintained at 0 deg. C. The suspension was then filtered on a bare Buechner funnel, the filtrate poured through the mat, and the pulp washed many times by repeatedly suspending it in a large volume of distilled water. Finally a slow stream of distilled water was passed through the pulp in thin suspension for about eight hours. This yielded a pulp free from alkali, as indicated by the fact that the extract of a sample showed no alkalinity to phenolphthalein after

being soaked in distilled water at 4 per cent consistency for 30 hours at 20 deg. C. After being wasned free from alkali the pulps were filtered and air dried, finally being tested for their ability to decrease the normality of 0.005 *N* sodium hydroxide in the usual manner. Table VIII shows the relation between the pentosan content of pulps and the abilities of these pulps to bind alkali.

TABLE VIII.—EFFECT OF REDUCING PENTOSAN CONTENT ON THE ABILITY OF PULPS TO REDUCE ALKALINITY

Pulps	Pentosans Per Cent	Loss in Alkalinity Per Cent
Original alpha	4.47	19.4
Treated alpha	1.50	18.1
Original unbleached kraft	10.48	67.1
Treated unbleached kraft	5.44	59.1
Original bleached sulphite	6.28	84.7
Treated bleached sulphite	1.54	30.8
Original unbleached sulphite	5.58	84.1
Treated unbleached sulphite	1.67	46.4

In the case of the pulps which underwent an alkaline treatment in their preparation, the Alpha and kraft, the change in pentosan content had little effect on their ability to decrease alkalinity. On the other hand, the change in the case of the acid pulps is marked. The indication is that the change in pentosan content alone is not responsible for any marked change in ability to bind alkali. The treatment to remove pentosans in all probability acts somewhat the same as the repeated treatments with dilute alkali as listed under Table IV. The reduction in ability to bind alkali probably takes place because of the removal of materials causing neutralization.

From the work done by investigators on the effect of immersing pulp in acid or alkali, it might be expected that the ability of a pulp to remove alkalinity would depend on its ability to take up hydroxide ions which, in turn, would depend on whether it was last in contact with an acid or alkaline solution. Examination of the data in Table I shows that kraft pulps, in spite of their alkaline treatment, still reduce strongly the alkalinity of low normality sodium hydroxide. Also, Table V shows that no relationship exists between the *p*H of the pulp and its ability to reduce alkalinity. The results shown in Table IV demonstrate that the effect of treatment with 0.005 *N* alkali is to remove neutralizing constituents. Otherwise the treatment with very dilute alkali seems to have little effect on altering the ability of a pulp to bind alkali.

An experiment was made to determine how the ability of pulps to bind alkali would be affected by first treating the pulps with 0.005 *N* sulphuric acid. The pulps were treated as for the measurement of loss of alkalinity, except that 0.005 *N* sulphuric acid was used in place of sodium hydroxide. The pulps were washed with one liter of distilled water, air dried, and then tested for their effect on 0.005 *N* sodium hydroxide. Table IX gives the results.

TABLE IX.—LOSS IN ACIDITY OF 0.005 N H_2SO_4 AND THE EFFECT OF ACID TREATMENT ON THE LOSS OF ALKALINITY OF 0.005 N NaOH

Pulp	Original Pulp Per Cent Loss in Alkalinity of 0.005 N NaOH	Original Pulp Per Cent Loss in Acidity of 0.005 N H_2SO_4	Acid Treated Pulp Per Cent Loss in Alkalinity of 0.005 N NaOH
Groundwood	97.2	56.2	96.5
Semibleached kraft	86.8	82.9	82.0
Bleached sulphite	84.7	42.3	78.2
Unbleached sulphite	84.1	23.5	78.1
Unbleached Mitscherlich	77.9	29.1	76.9
Unbleached kraft	67.1	29.5	73.8
Alpha pulp	19.4	28.7	32.6
No. 1 muslin	16.5	10.8	

Table IX shows that the abilities of pulps to bind alkali are not greatly affected by immersion in weak acid solution. No marked change is noted as would be expected if a reversal of charge greatly increased hydroxide ion absorption. However, it will be noted that the two pulps, and only those two, which were last treated commercially under alkaline conditions, kraft and Alpha, do exhibit an increase in ability to reduce alkalinity after being acid treated; this may indicate that some reversal of charge does take place on those pulps. Nevertheless, it may be concluded that the *p*H of the final treatment of the pulp is not a major factor in determining the ability to decrease alkalinity.

The fact that the ability of a pulp to decrease the acidity of a dilute *acid* solution bears some relationship to its ash content is demonstrated by the data in Table IX. This has been observed by a number of investigators as being true in the case of alum solutions as well as dilute sulphuric acid solutions. Table X shows the relationship, with ash contents tabulated.

TABLE X.—ASH CONTENTS OF PULPS AND THEIR ABILITIES TO REDUCE THE ACIDITY OF 0.005 N H_2SO_4

Pulp	Ash Content Per Cent	Loss in Acidity of 0.005 N H_2SO_4 Per Cent
Unbleached kraft	0.719	89.5
Semibleached kraft	1.320	82 9
Groundwood	0.306	56.2
Bleached sulphite	0.617	42.3
Unbleached Mitscherlich	0.512	29.1
Alpha pulp	0.171	28.1
Unbleached sulphite	0.318	23.5
No. 1 muslin	0.131	10.8

The trend is apparent that with lower ash content the ability to decrease alkalinity is also lower. The groundwood can hardly be compared with other pulps, because of its high degree of lignification, and the unbleached sulphite probably exhibits exceptional behavior because of its unusual acidity due to incomplete washing after pulping.

The extractives present are not likely to be of any major importance in determining the alkali binding power of a pulp because the alkaline pulps, low in extractives, show losses of alkalinity in the same range as do acid pulps which are high in extractives. To confirm this conclusion, a sample of the unbleached sulphite, which was high in extractives, was extracted for eight hours with hot water, washed, air dried, and its new alkali binding power determined. The extractives removed equaled 1.684 per cent of the weight of the pulp; the loss of alkalinity of 0.005 *N* sodium hydroxide, determined in the usual manner on the pulp after the extraction, was 77.0 per cent as compared with 84.1 per cent before extraction. The change is small enough to indicate that the extractives removed did not greatly affect the character of the pulp in so far as its alkali-binding power was concerned.

To determine whether the alteration in rag pulp which might take place during the period of standing in contact with excess bleach is reflected in the ability of the pulp to reduce alkalinity, runs were made in the usual manner on regular drainer aged No. 1 muslin half stock left in the drainers for some months, muslin half stock well washed immediately after bleaching, and the well washed muslin half stock oxidized by a neutral one per cent hydrogen peroxide solution for 24 hours at 20 deg. C. and four per cent consistency. The loss of alkalinity for these stocks, respectively, were 16.52 per cent, 18.10 per cent and 18.10 per cent, indicating that mild oxidation, such as takes place in drainer aging of

rags, cannot be followed by any marked change in ability of the pulp to reduce alkalinity. However, it is not to be assumed that a very low ability to bind alkali is characteristic of all commercial rag pulps. A sample of "thirds and blues" showed a loss of alkalinity of 32.2 per cent of the total alkalinity of 0.005 *N* sodium hydroxide.

Conclusions

The following conclusions may be drawn from the results of this investigation:

(1) Commercial wood pulps decrease the alkalinity of a very dilute sodium hydroxide solution, in part by chemical combination of the alkali with acidic constituents from the pulp. The presence of combined organic acids in the alkaline filtrates has been proved.

(2) Commercial wood pulps decrease the alkalinity of a very dilute sodium hydroxide solution in part by sorption; in the case of rag and purified pulp the removal is due entirely to sorption. Such sorbed alkali can easily be washed out.

(3) No exchange adsorption takes place between the inorganic constituents of pulps and the sodium hydroxide from alkaline solutions of low concentrations.

(4) A relationship exists between the lignin content of a pulp and the amount of alkali sorbed by the pulp.

(5) A relationship also appears to exist between the alkali-binding powers of pulps and copper numbers of the pulps.

Literature Cited

(1) Bialkowsky, H. W., "A contribution to the knowledge of rosin sizing." *Paper Trade J.* 97, no. 13:29-46 (Sept. 28, 1933).
(2) Viewig. *Ber.* 40:3876 (1907).
(3) Kolthoff, L. M., "Adsorption of alkalies by cellulose." *Parm. Weekblad* 58:46-56 (1921); C.A. 15:966.
(4) Lorenz, R., "The alkali cellulose problem." *Wochbl. Papierfabr.* 56:23-35 (1925); *C.A.* 19:3016.
(5) Neale, S. M., *J. Textile Inst.* 20:T373-99 (1929); 21:T225-30 (1930); 22:T349-56 (1931); 22:T320-38 (1931); 24:T30-34 (1933).
(6) Edge, S. R. H., "The absorptive power of cellulose." *J. Soc. Chem. Ind.* 48:118-21T (1929).
(7) Treadwell, E. P., and Hall, W. T., "Analytical Chemistry," 7th ed. Vol. II, page 76. New York, Wiley, (1930).
(8) Griffin, R. C., "Composition of pulp ash." *Paper Trade J.* 90, no. 18:63 (May 1, 1930).
(9) Kamm, O., "Qualitative Organic Analysis, page 65. New York, Wiley, (1932).
(10) Burgen, J. H., and Minor, J. E., "The copper number test." *Tech. Assoc. Papers* 13:273 (May, 1930).
(11) Bray, M. W., "Methods used at the Forest Products Laboratory," page 28. (August, 1928).
(12) Dickson, A. D., Otterson, H., and Link, K. P., "A method for the determination of uronic acids." *J. Am. Chem. Soc.* 53: 775-9 (1930).
(13) Ritter, G. J., Seborg, R. M., and Mitchell, R. L., "Factors affecting quantitative determinations of lignin by 72 per cent sulphuric acid method." *Ind. Eng. Chem. Anal. Ed.* 4:202-4 (1932).
(14) Browning, B. L., Unpublished work. The Institute of Paper Chemistry, Appleton, Wis.

To Lecture on Water Chemistry

Plant executives, engineers and chemists—with a direct interest in "The Chemistry of Water" as it applies to their own plants—are invited to attend a series of five lectures on that subject. Men holding similar positions in New York, Chicago, Philadelphia and Baltimore have widely acclaimed these interesting lectures, which were previously given in the cities named.

A technical subject that has been reduced to understandable terms for the layman, without detracting from the advanced technical ideas which now mark the science of hydro-chemical engineering. In addition to instructions in modern methods of analyses and their interpretation, the lecturers will cover the technique of solving problems in Waste Disposal, Boiler Feedwater Correction, Sewage Disposal, Industrial Water Supplies, Municipal Water Supplies and kindred subjects.

These lectures will be given under the personal supervision of James K. O'Brien, general manager of sales and service, of W. H. & L. D. Betz, chemical engineers and consultants. Guest lecturers from the Technical Department of the Betz organization will include L. Drew Betz, Robert T. Sheen, John J. Maguire, Edwin M. Ross, and John W. Tarman, recognized authorities on their subjects.

In Buffalo, the lectures will be given in the Ball Room of the Hotel Statler—The first lecture on Monday evening, November 14 and continuing each Monday evening for a total of five weeks. In Cleveland, they will be given in the Euclid Room of the Hotel Statler—beginning on Tuesday evening for a total of five weeks. Attendance may be arranged through correspondence, or by personal application before eight o'clock at the opening lectures, in either Cleveland or Buffalo.

Dilts System In Australian Mill

The Dilts Machine Works of Fulton, N. Y., in collaboration with the James L. Carey Company of Chicago have sold to the Australian Paper Manufacturing, Ltd. of Princes Bridge, Australia a complete stock preparation system for the production of paper board.

Because of the long experience of the Dilts engineers in designing efficient and practical paper mill systems, the Australian engineers have been saved much time and effort in the development of their new mill, through the co-operation of this company with officials of the Carey organization and they are assured of the most up-to-date equipment and efficiency in the production of paper board.

The plans as accepted call for a 100 ton breaker beater system with the latest type of equipment including the Dilts-built Cowles Classifiner. The system will handle stuff as well as trash of every nature without clogging or delaying production. Rejects will be handled at a very thin consistency. The complete system will meet every need of present production, and, because of its extreme flexibility it offers a surplus capacity that may prove a distinct advantage at many times.

In carrying out the details of this plan, the Australian Paper Manufacturing, Ltd. are assured of the most modern means of defibering and screening mixed paper stock, with an efficient, economical production system that offers a larger daily tonnage and a better and cleaner stock at a much lower production cost than in the past.

The Australian Paper Manufacturing, Ltd. are also augmenting their present system in their Sydney, Australia plant with a Cowles Classifiner, thus increasing production in this plant at a material saving in power consumption.

Armored Floors for Paper Mills

Maintenance engineers annoyed with frequent production delays and costly repair bills caused by poor floors, will be interested in a bulletin on Armored Floors for paper mills published by Snead & Co., 176 Pine street, Jersey City, N. J. The manufacturers will be glad to send a copy of this bulletin to readers of the PAPER TRADE JOURNAL.

Existence and Nature of Fiber Membranes*

Progress Report

By H. F. Lewis [1]

It will be recalled from last year's report that gelatinous material was removed from pulp fibers by treating these with cuprammonium hydroxide, followed by centrifuging the residue from the cuprammonium cellulose solution. This material, upon treatment with acetic acid, was separated into one portion, ultimately recovered as a white gel, which, on drying, gave a white powder, and into a second but smaller portion which appeared to be lignin. The carbohydrate fraction gave a negative test for pectin, and upon hydrolysis gave 97 per cent reducing sugar, calculated as glucose. The principal sugar present was glucose, although galactose and pentosans were also present.

Solubility of Cotton Cellulose

The presence in the literature of suggestion that cotton cellulose is insoluble in cuprammonium hydroxide, while the cementing material dissolves to give the viscosity commonly attributed to cellulose in the cuprammonium solution, made it desirable to investigate more in detail the pulp cuprammonium system.

Farr, in a paper published in the *Pulp and Paper Magazine of Canada* (37: 74-8 (1936)), discusses the effect of the extraction of cotton cellulose with pectic solvents and concludes that "the cellulose component of the plant cell membrane does not dissolve in cuprammonium to produce the viscosities commonly attributed to it, but that the cementing material which surrounds the particles is responsible for the much discussed phenomenon." The pectic substance she extracts with pectic solvents such as dilute ammonium oxalate, alkaline solution, or hydrochloric acid (sp. gr. 1.19). The extracted cotton is essentially free of pectic material, and this material is said to form a suspension of ellipsoid particles in the cuprammonium hydroxide which may be recovered.

Inasmuch as this is the general method used by us for recovering small amounts of amorphous so-called "membrane material," it seemed highly important to check our work with pulp fibers by extracting them with pectic solvents and then to study both the insoluble material and the solution.

This was done at the Institute by T. A. Howells and a partial report was presented last fall at the Savannah meeting (*Paper Trade J.*, December 30, 1937).

Bleached Mitscherlich pulp, having an original viscosity of 32.8 centipoises, was used for the study. This pulp, after extraction with cuprammonium hydroxide solution, was found to yield about 1.5—2.0 per cent of ash-free cuprammonium hydroxide-insoluble material which on analysis, was carbohydrate in nature. After acid hydrolysis the principal sugar was found to be glucose.

One of the important pectic solvents recommended was 0.5 per cent ammonium oxalate. The pulp was accordingly extracted with this solution for varying times up to 18 hours at both 75 and 95 deg. C. and then both viscosity and cuprammonium-insoluble residue determined. There proved to be practically the same amount of insoluble residue even after 18 hours at 95 deg. C. This same pulp now had a viscosity of 29.6. However, pulp heated at 95 deg. C. for 18 hours had a viscosity of 28.4, and pulp heated in water for 18 hours at 95 deg. C. had a viscosity of 27.5, although the water-extracted pulp now had but 1.0 per cent of material insoluble in cuprammonium hydroxide.

Acid and Alkaline Solvents

Other solvents recommended by Mrs. Farr were acids and alkalis. This same bleached Mitscherlich was extracted by these solvents. Acid extractions using 0.1 *N* HCl for 18 hours at 95 deg. C. reduced the viscosity to 9.5 and to 7.2 using 1 per cent sulphuric acid. The pulps after this treatment also showed a notable loss in alpha-cellulose and a gain in copper number: therefore, much degradation of cellulose had resulted. Unfortunately, the insoluble residues were not determined on these particular pulps, but others of a similar type showed much lower contents of insoluble bodies. For example, an alcohol-benzene extraction of the original pulp yielded a product containing about 1.5 per cent of residue. The same pulp, first treated with hot dilute acid and then extracted with alcohol-benzene, yielded but 0.2 per cent of insoluble material.

Likewise this same pulp of original viscosity of 32.8, after 18 hours at 95 deg. C. with 0.05 per cent NaOH, had a viscosity of 27.2. Under the same condition with 1 per cent NaOH the viscosity was 29.6. Pulp, first extracted with alcohol-benzene then with hot dilute caustic, gave only 0.05—0.1 per cent of cuprammonium-insoluble residue.

It would appear as though hot dilute ammonium oxalate was removing very little from the pulp, and the viscosity of the extracted pulp was only slightly lower than that of the original pulp. Hot dilute alkaline solutions remove almost all of the insoluble residues, but in spite of that the viscosities are changed even less than is the case with the untreated pulps exposed to this same temperature for the same time.

Hot dilute acids remove the carbohydrate residues and at the same time degrade the cellulose; the pulps produced by the acid treatment have lower alpha-cellulose contents and higher copper numbers than the original pulp.

It should be pointed out that these technics are laborious and time-consuming. A complete report of this section of Dr. Howells' research will soon appear in the *Paper Trade Journal*.

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Waldorf-Astoria Hotel, New York, N. Y., Feb. 21-24, 1938.

[1] Member TAPPI, Institute of Paper Chemistry, Appleton, Wis.

Studies of Freeness Upon a Recording Freeness Tester *

By F. M. Williams [1]

In the earlier history of freeness testing, interest centered principally around the control of grinders in the groundwood pulp mill. Nowadays, however, freeness has come to be considered one of the most valuable controls in the manufacture of paper, practically all the way through the paper mill. Freeness tests give an indication of what is being done in the beaters, in the jordans, in the refiners and is used in progressive mills as a final control of the stock at the head-box of the paper machine.

Different stocks behave differently in all of these processes of treatment and it is of the utmost importance in the manufacture of paper to know just what response a given stock has to a given process of treatment.

Probably the oldest type of freeness tester is what is known as the differential overflow, two-orifice type. Examples of this would be the Schopper-Riegler, Canadian Standard, Green and the Williams Model B. All of these are open to several serious objections.

1. The results obtained in cc. of the differential flow are only empirical and while these may bear some relation to the freeness behavior of stock on a paper machine, the relationship is very indirect in its application to practical freeness as related to paper making.

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Waldorf-Astoria Hotel, New York, N. Y., Feb. 21-24, 1938.

[1] Member TAPPI, President, Williams Apparatus Co., Inc., Watertown, N. Y.

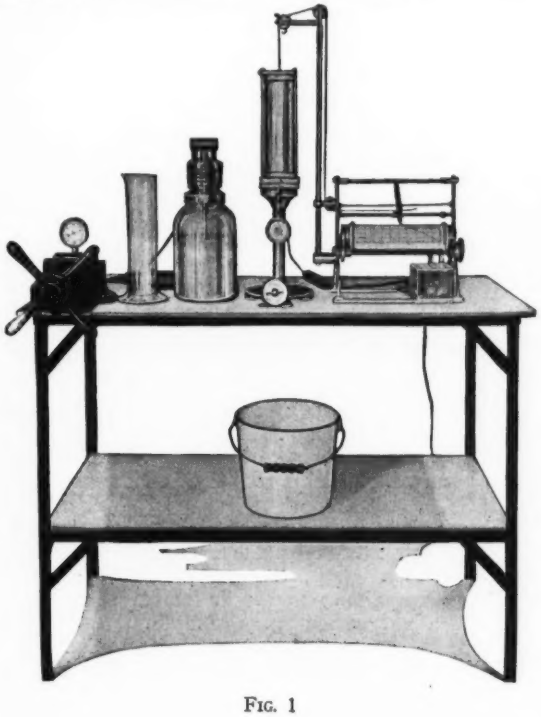

FIG. 1

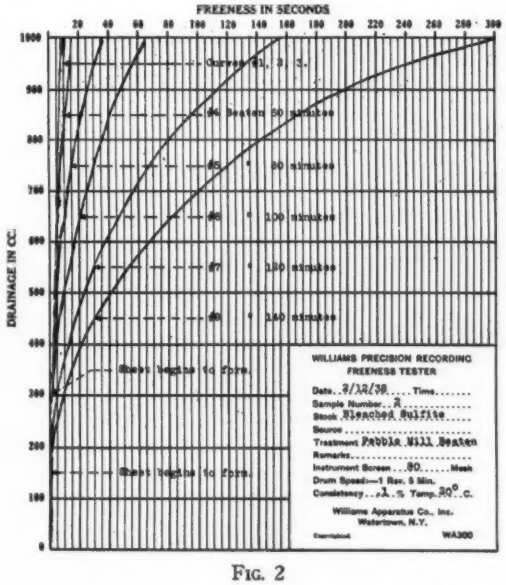

FIG. 2

2. In the two-orifice differential overflow type, the side outlet is usually placed some distance up the side of the cone which necessitates the building up of a certain differential of flow before the upper orifice is reached and any readings are obtained. The error from this cause is much greater in the case of slow than with free stocks. A stock may be slow enough not to give any reading on this type of instrument.

The second type of freeness tester in general use is what is known as the sedimentation or direct drainage type. This type duplicates the conditions of freeness as experienced with stock on the regular paper machine as it measures and expresses freeness in terms of the number of seconds required to deliver a given volume of water through a wire screen.

Several refinements making for accuracy have been made in this type of tester since the earlier models, such as automatically controlled timing by means of a stop watch or electric time clock, hinged cylinder holder, new valve mechanism, etc.

The latest development or improvement in this type of instrument is an attachment by which a permanent graph or record showing, not only the end point freeness when 1000 cc. has passed, but also indicating the rate at which the stock loses its water during the entire test period.

The desirability of some means of indicating freeness in its various stages was brought to the writer's attention by C. O. Bachman who has conducted extensive research experiments, the results of which have been published under the general topic of "Multiple Stage Freeness Testing." He has found that

the freeness characteristics of a stock at various points in the delivery of its water is even more important in the control of a paper machine than the end point freeness. Two stocks may have the same final freeness but differ greatly in the intermediate stages as shown on the paper machine. He has found that when the freeness curve is right, the paper is right.

Upon this suggestion, we set to work to develop an instrument which would give a permanent graphic record of the entire test.

It will be noted that the recording mechanism consists of a revolving drum to which a chart is attached and which is driven by a constant speed motor.

A float placed in the cylinder causes a pen to move along a slide during the entire drainage period, thus producing the graph.

By means of a Mercoid switch, the recording mechanism is automatically started and stopped when the outflow valve is opened or closed.

Some of the information gained from this may be briefly noted:

1. It answers the old question: "When is paper made on the paper machine?" Paper may be "made in the beaters" but it is formed on the machine. How much of its water must a stock lose before it forms a mat on the wire? Anyone passing through the machine room can note this by observing the stock on the wire but hitherto there have been no numerical measurements of this.

From Fig. 2, it will be noted that the sheet begins to form on a stock of 0.1 per cent consistency, beaten 140 minutes, freeness 300 seconds, when it has lost 150 cc. or 15 per cent of its water, whereas in the case of the same stock beaten 20 minutes, freeness 7 seconds, it shows that the sheet does not begin to form until it has lost 300 cc. or 30 per cent of its water.

2. Other interesting information is shown in Fig. 2 which is a series of graphs showing the effect of pebble mill beating on a sample of bleached sulphite

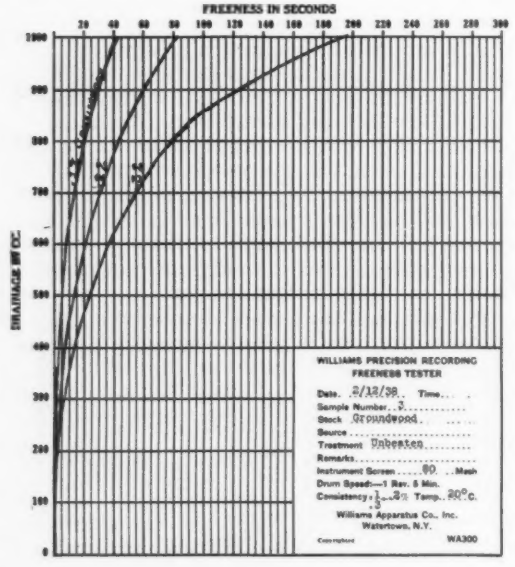

FIG. 3

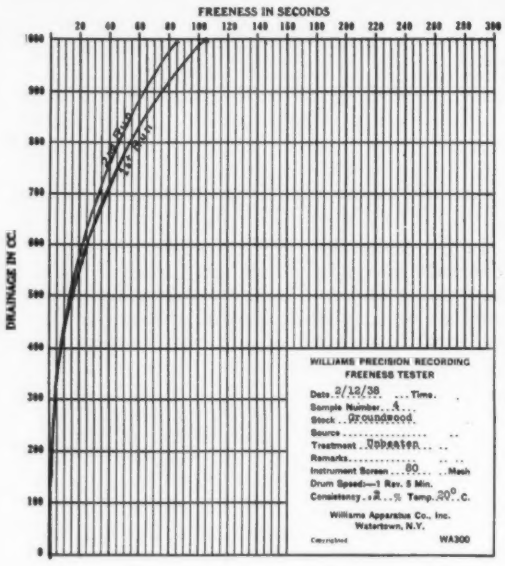

FIG. 4

stock, samples being taken at 20 minute intervals from the initial up to 140 minutes' beating time.

It is interesting to note that the first 40 mintues beating, (curves 1, 2, 3) which gave a final freeness of only fifteen seconds had comparatively little effect upon the stock.

Curve 7, beating time 120 minutes, freeness 155 seconds showed decided hydration but the most surprising point in this connection is that *50 per cent of the entire slowing up of this stock took place in the last 20 minutes of beating* in which time the slowness was increased from 155 seconds to 300 seconds.

Fig. 3 shows the effect of variations in consistency of a sample of groundwood stock. At 0.1 per cent consistency, the freeness is 41 seconds. At 0.2 per cent, it is 82 seconds. But at 0.3 per cent consistency, the slowness increases rapidly showing a freeness of 195 seconds.

This Precision Freeness Tester may also be used to indicate white water losses due to fines passing through the wire. The procedure is as follows:

After a freeness test has been made in the usual manner, the moist pad on the screen stirred up with water and the volume made up to 1000 cc. as before, it is now passed through the instrument a second time. This second freeness determination, Fig. 4 on the same sample invariably gives a reading showing a greater freeness. The difference between this and the original reading is due to the loss of the fines which passed through the wire into the white water on the first run through the instrument.

It is hardly necessary to emphasize the advantages of a permanent graphic record of all freeness tests, viz.:

Showing characteristics of stock, not only as to final freeness but also its rate of drainage at all intermediate stages.

Providing permanent records for future reference.

Duplicating previous runs of orders on the paper machine.

Duplicating customers' orders for either pulp or paper where "Same as before" is specified.

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Financing and Operation of Pulp and Paper Mills

General Construction News

Chattanooga, Tenn.—The Star Box and Printing Company, 1414 Chestnut street, manufacturer of corrugated boxes and containers, has approved plans for large modern addition to plant, one-story, 300 x 500 feet, to be equipped to double present capacity. New units will have large window area for daylight operating facilities, with sprinkler system and other installation for efficient production. General erection contract has been let to the H. K. Ferguson Company, Hanna Building, Cleveland, Ohio, and work will be placed under way at early date. Cost estimated over $350,000, including machinery and equipment.

Wilmington, Del.—E. I. duPont deNemours & Co., Inc., Rayon Division, duPont Building, Wilmington, manufacturer of cellulose rayon products, has taken option on large tract of land in Southern part of Delaware, as site for new mill, for which plans will be drawn at once. Plant will comprise several large one and multi-story buildings, power house, machine shop, pumping station and other operating units, and is reported to cost close to $7,000,000, with machinery. Facilities will be provided for employment of about 1000 persons. It is proposed to begin work on project at early date and have mill ready for operation late in 1939 or early in 1940. Company engineering department, first noted address, will be in charge.

Grand Rapids, Mich.—The Certain-teed Products Corportion, Gypsum Division, Military road, Buffalo, N. Y., manufacturer of wall board and other products, has plans for modernizing and improving mill on Butterworth road, Grand Rapids, used for wall board manufacture, idle for several years past. Property was acquired by the company in 1928 and operated only for a short period. Buildings will be improved, with complete modernization of machinery and other operating equipment, including replacements. Work is scheduled to be placed under way at early date. Facilities will be provided for employment of close to 100 men. No estimate of cost of project has been announced. H. H. Van Hagen is manager of production of gypsum division, first noted address.

East Rochester, N. Y.—The Lawless Brothers Paper Mills, Inc., manufacturer of fiber board specialties, container board, etc., has begun work on new addition to mill at East Rochester, recently referred to in these columns, to be one-story, 55 x 240 feet, reported to cost approximately $60,000, with equipment. It will be used for storage and distributing service. Steel framing for superstructure is being furnished by the Pittsburgh-Des Moines Steel Company, Neville Island, Pittsburgh, Pa.

Philadelphia, Pa.—The Stark Paper and Twine Company, 217 Race street, has leased two floors in the industrial building at 506-8 Cuthbert street, and will occupy for storage and distributing departments.

Binghamton, N. Y.—The Agfa Ansco Corporation, Charles street, manufacturer of photographic and other processed paper stocks, will make alterations and improvements in two buildings at local plant, known as Buildings Nos. 14 and 29, and will develop for increased and improved operations. General contract has been awarded to the W. E. Wark Company, 1608 Walnut street, Philadelphia, Pa., and work will be placed in progress at once. It is estimated to cost close to $50,000. As recently noted in these columns, company has placed an award with the same contractor for new multi-story addition to plant, estimated to cost about $150,000, with equipment, and on which erection is being placed under way. Lockwood, Greene Engineers, Inc., 30 Rockefeller plaza, New York, N. Y., is architect and engineer for both projects noted.

Charleston, S. C.—The Charleston Paper Company, 225 East Bay street, general paper products, has plans under way for rebuilding its property at East Bay and Market streets, and will modernize and improve the structure for general operations. It is expected to begin work soon. No estimate of cost has been announced. Stephen Thomas, 29 Broad street, Charleston, is architect.

Belmont, N. C.—The Belmont Box Company, recently formed with capital of $50,000, has completed details of organization, with election of A. C. Lineberger as president. Company has a new local plant ready for operation, previously referred to in these columns, to specialize in the production of paper boxes and containers for hosiery and kindred textile products, and will operate on a capacity schedule at early date. Plant is reported to represent an investment of about $35,000, with equipment, and will be used largely for containers for the Hatch Full-Fashioned Hosiery Company, Belmont, of which Mr. Lineberger, noted, is an official. J. M. Hatch, another officer of last noted company, is interested in the Belmont Box Company.

Chicago, Ill.—The National Paper Company, Hubbard avenue and Green street, manufacturer of paper goods, has taken out a building permit for new addition to plant at 440-46 North Green street, recently referred to in these columns, and will place superstructure under way at once. It will be three-

story and basement, about 40 x 100 feet, and will be used for expansion in storage and distributing division. It is reported to cost close to $40,000, including equipment. R. Busa & Sons, 1700 North Narragansett avenue, are general contractors; an award for interior woodwork has been let to Ventrell & Company, 5240 West Congress street. W. T. Braun, 228 North LaSalle street, is architect.

Newcastle, Australia—The Masonite Corporation (Australia), Ltd., affiliated with the Masonite Corporation, Laurel, Miss., manufacturer of insulating board products, pressed board specialties, etc., has completed the erection of its new mill at Raymond Terrace, near Newcastle, New South Wales, which has been in course of building for several months, and will place the plant in operation at once. It is expected to develop maximum output at early date. The new mill represents an investment of about $450,000, and includes a power house, with stack 150 feet high, a pumping station and other mechanical-operating departments. The company has stocked the plant in recent weeks with a large quantity of timber for continuous pulp wood production. F. W. Pettingall is company engineer at plant.

Paper Men Meet at Jacksonville

A very successful meeting of engineers, superintendents, managers and chemists of the paper and allied industries of the South Atlantic Region was held at the Roosevelt Hotel, Jacksonville, Fla., on Saturday, October 15, 1938. A large portion of those present were members of the Technical Association of the Pulp and Paper Industry. It is expected that eventually the group will become one of the local sections of TAPPI.

The first meeting of the group was held at Savannah, Ga. last spring, at which time Charles Carpenter, of the Herty Foundation Laboratory, Savannah, was elected chairman of the organization committee. Dr. Carpenter presided as chairman of the Jacksonville meeting which was attended by about seventy-five individuals.

On Saturday morning there were visits to the plants of the National Container Company and the Glidden Company, the latter being a manufacturer of rosin and naval stores. At the luncheon an address of welcome was given by R. H. Laftman, Manager of the National Container Company and D. G. Moon, director of the Southern Paper Festival Corporation, explained the plans of his organization which is preparing an exposition in the interest of the paper industry to be held in Savannah in April 1939. In the afternoon the ladies present participated in a bridge tournament.

Three papers were presented at the afternoon technical session. O. W. A. Rodowski, of the Union Bag and Paper Corporation, Savannah, read a paper on "Unusual Beating Characteristics of Pulps" in which he showed how many pulps have a tendency to increase in freeness when beaten. He pointed out that a drainage test as well as a freeness test should be made on pulps to note their property of retaining water after being beaten. George Witham, of the Ciba Company, Charlotte, N. C., gave a talk on "The Application of Aniline Dyes to Paper" and R. G. Macdonald, secretary-treasurer of TAPPI, gave a brief talk on "Current Economic Trends in the Paper Industry".

In the business meeting that followed it was decided to effect a permanent local organization to be known for the present as the Southern States Pulp and Paper Club. D. G. Moon, consulting engineer of Savannah, was elected chairman, Rudolph Richter, of the National Container Company, Jacksonville, Fla., Vice Chairman and O. W. A. Rodowski, of the Union Bag and Paper Corporation, Secretary-Treasurer. The next meeting will probably be held during the Southern Paper Festival to be held in Savannah in April.

Among those present were: Claude M. Adams, Carl Anchors, Earl F. Anderton, U. S. Ansley, T. E. Bell, C. G. Bigelow, Roger G. Brown, Geo. W. Brumley, W. H. Burkitt, Charles Carpenter, Mr. and Mrs. N. L. Cochrane, A. R. Carrick, Mr. and Mrs. A. S. Cosler, Joseph A. Cronk, B. C. DeWitt, J. R. Dorsey, Mr and Mrs. S. W. Fletcher, Joseph S. Fox, Karl M. Guest, George A. Hawkins, Walter Hendrix, G. Hunsicker, J. Kipnis, R. H. Laftman, R. B. Lee, John G. Lewis, R. G. Macdonald, H. F. McLeroy, M. J. McWhorter, Lawrence Manning, L. W. Meadow, Mr. and Mrs. D. G. Moon, H. A. Murchison, E. M. Murray, J. H. Persons, M. M. Pinckney, R. C. Richter, G. A. Ritter, J. D. Robinson, Mr. and Mrs. W. A. Robinson, O. W. A. Rodowski, Olin Sanders, H. M. Shirley, L. A. Thompson, Rudolph Weiler, George Witham, C. S. Witham, H. R. Wurster and Paul R. Yopp.

World Wood Pulp Statistics

The United States Pulp Producers Association has just published the third edition of "World Wood Pulp Statistics." The foreword states that the publication "is a compilation of official data showing the relationship of the United States pulp industry to the world's production, consumption, imports and exports of wood pulp. It has been prepared with the view of bringing together in one publication all the obtainable essential data on this basic industry, and promoting a better understanding of the complexities of international trade in wood pulp." The statistics were compiled from original sources by D. M. Armstrong.

This 149-page, spiral bound publication is a valuable contribution to the industry and supplies a comprehensive reference book of factual information covering the world production of all grades of wood pulp entering into the production of paper and rayon yarn from 1927 to 1937.

Copies of the publication may be obtainable from O. M. Porter, manager, the United States Pulp Producers Association, 122 East 42d street, New York at $3.00 per copy.

Hurlbut Paper in Time Capsule

The copy of "The Book of Record" placed in the Time Capsule which was sunk in the New York World's Fair grounds on September 23rd was printed on Permanent Record Ivory Wove, made by Hurlbut Paper Company of South Lee, Mass.; as were all copies printed for the Westinghouse Electric and Manufacturing Company for distribution to leading libraries, museums and other repositories throughout the world.

Imports of Paper and Paper Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard, Wallboard, Cigarette Papers, Sulphite, Kraft and Ground Wood Pulp.

NEW YORK IMPORTS

WEEK ENDING OCTOBER 15, 1938

SUMMARY

Cigarette paper	506 cs.
Wall paper	7 cs.
Newsprint	3,050 rolls
Printing paper	107 rolls, 12 cs.
Wrapping paper	2 cs.
Filter mass	100 bls.
Filter paper	33 cs.
Drawing paper	20 cs.
Surface coated baryta paper	235 crates, 61 cs.
Surface coated paper	15 cs.
Metal covered paper	21 cs.
Photo paper	4 cs.
Decalcomanias	24 cs.
Decalcomania paper	73 cs.
Transparent paper	6 cs.
Transfer pictures	11 cs.
Tissue paper	11 cs.
Colored paper	5 cs.
Tracing cloth	22 cs.
Paper tubes	88 cs.
Miscellaneous paper	196 pkgs., 7 bls., 69 cs.

CIGARETTE PAPER

De Mauduit Paper Corp., *Ile de France,* Havre, 2 cs.
Champagne Paper Corp., *Ile de France,* Havre, 504 cs.

WALL PAPER

———, *Bremen,* Bremen, 1 cs.
Titan Shipping Co., *Oslofjord,* Hagarstrom, 6 cs.

NEWSPRINT

H. G. Craig Co., Inc., *G.D.D.* Donnacona, 340 rolls.
———, *Hamburg,* Finland, 318 rolls.
Jay Madden Corp., *Hamburg,* Finland, 201 rolls.
Lunham & Reeve, Inc., *Kolsnaren,* Kotka, 425 rolls.
Jay Madden Corp., *Berlin,* Finland, 293 rolls.
H. G. Craig Co., Inc., *A.B.C.,* Donnacona, 312 rolls.
Jay Madden Corp., *Rydboholm,* Kotka, 143 rolls.
Lunham & Reeve, Inc., *Rydboholm,* Kotka, 285 rolls.
International Paper Co., *International #1,* Gatineau, 348 rolls.
Jay Madden Corp., *Scanmail,* Kotka, 385 rolls.

PRINTING PAPER

Hensel Bruckman & Lorbacher, *Hamburg,* Hamburg, 5 cs.
Steiner Paper Corp., *Berlin,* Bremen, 6 cs.
E. Henningson Co., *Bremen,* Bremen, 1 cs.
H. Reeve Angel & Co., Inc., *Scanmail,* Kotka, 107 rolls.

WRAPPING PAPER

———, *Pennland,* Antwerp, 2 cs.

FILTER MASS

A. W. Fenton, Inc., *Berlin,* Bremen, 100 bls.

FILTER PAPER

H. Reeve Angel & Co., Inc., *Georgic,* London, 25 cs.
H. Reeve Angel & Co., Inc., *American Merchant,* London, 8 cs.

DRAWING PAPER

Keuffel & Esser Co., *Hamburg,* Hamburg, 17 cs.
Artists Brush & Color Corp., *American Merchant,* London, 3 cs.

SURFACE COATED BARYTA PAPER

Globe Shipping Co., *Hamburg,* Hamburg, 73 crates.
Globe Shipping Co., *Berlin,* Bremen, 162 crates.
L. A. Consmiller, Inc., *Berlin,* Bremen, 10 cs.
L. A. Consmiller, Inc., *Bremen,* Bremen, 42 cs.
Dingelstedt & Co., *Pennland,* Antwerp, 9 cs.

SURFACE COATED PAPER

L. A. Consmiller, Inc., *Bremen,* Bremen, 5 cs.
Hensel Bruckman & Lorbacher, *Bremen,* Bremen, 10 cs.

METAL COVERED PAPER

K. Pauli Co., *Hamburg,* Hamburg, 1 cs.
———, *Bremen,* Bremen, 20 cs.

PHOTO PAPER

Heemsoth Kerner Corp., *Hamburg,* Hamburg, 4 cs.

DECALCOMANIAS

Sellers Transportation Co., *Hamburg,* Hamburg, 6 cs.
Sellers Transportation Co., *Bremen,* Bremen, 18 cs.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., *Scythia,* Liverpool, 49 cs. (duplex), 3 cs. (simplex).
B. F. Drakenfeld & Co., *American Shipper,* Liverpool, 21 cs. (duplex).

TRANSPARENT PAPER

M. J. Corbett & Co., *Statendam,* Rotterdam, 6 cs.

TRANSFER PICTURES

Rohner Gehrig & Co., *Bremen,* Bremen, 11 cs.

TISSUE PAPER

Y. Yabuki & Co., *Marviken,* Kobe, 4 cs.
Dingelstedt & Co., *American Shipper,* Liverpool, 4 cs.
W. J. Byrnes & Co., *American Merchant,* London, 3 cs. (coated).

COLORED PAPER

Kupfer Bros., Co., *Hamburg,* Hamburg, 4 cs.
D. C. Andrews & Co., *Bremen,* Bremen, 1 cs.

TRACING CLOTH

C. Bruning & Co., *Bremen,* Bremen, 22 cs.

PAPER TUBES

———, *Hamburg,* Hamburg, 88 cs.

MISCELLANEOUS PAPER

Corn Exchange Bank Trust Co., *Nankai Maru,* Kobe, 3 cs.
Remington Rand, Inc., *Nankai Maru,* Kobe, 20 cs.
Rohner Gehrig & Co., *Ile de France,* Havre, 196 pkgs., 3 cs.
Ensign Manfg. Co., *Marviken,* Yokohama, 10 cs.
Chase National Bank, *Hamburg,* Hamburg, 2 cs.
Nestles Milk Products, Inc., *Scythia,* Liverpool, 7 bls.
Japan Paper Corp., *P. Maersk,* Kobe, 31 cs.

RAGS, BAGGINGS, ETC.

J. Cohen Son Co., Inc., *Scythia,* Liverpool, 19 bls. rags.
———, *Transylvania,* Glasgow, 76 bls. paper stock, 54 bls. bagging.
Hughes Fawcett, Inc., *Transylvania,* Glasgow, 34 bls. flax waste.
Chase National Bank, *Sevzaples,* Leningrad, 443 bls. linen rags, 218 bls. linen cuttings.
Banco Coml. Italiane Trust Co., *Anita,* Buenos Ayres, 204 bls. rags.
Bank of N. Y. Trust Co., *Anita,* Buenos Ayres, 146 bls. bagging, 66 bls. old cottons, 29 bls. garments.
Wertheimer Bag Co., *Fort Amherst,* Halifax, 121 bls. bagging.
———, *American Shipper,* Manchester, 51 bls. waste string, 50 bls. old twine.
E. J. Keller Co., Inc., *American Shipper,* ———, 115 bls. bagging.
Hughes Fawcett, Inc., *Cameronia,* Glasgow, 42 bls. flax waste.
E. J. Keller Co., Inc., *Excambion,* ———, 137 bls. paper stock.

GLUE STOCK, ETC.

Anchor Mercantile Co., Inc., *Scanmail,* Gdynia, 100 bags bone glue.
———, *Vulcania,* Trieste, 50 bls. bone glue sheets, 200 bags hide cuttings.
———, *Scythia,* Liverpool, 276 bags hide cuttings.

OLD ROPE

E. J. Keller Co., Inc., *American Merchant,* ———, 134 coils.
National City Bank, *American Merchant,* London, 43 bls.
———, *American Merchant,* London, 62 coils.

WOOD PULP BOARDS

Jay Madden Corp., *Kolsnaren,* Kotka, 61 rolls.
———, *Kolsnaren,* Viipuri, 122 bls.
Jay Madden Corp., *Rydboholm,* Kotka, 52 rolls, 404 bls.
———, *Rydboholm,* Viipuri, 218 rolls.
Jay Madden Corp., *Scanmail,* Kotka, 23 rolls.
———, *Hamburg,* Hamburg, 35 bls. (sheets)

WOOD PULP

M. Sone, *Hamburg,* Hamburg, 392 bls. wood pulp, 53 tons.
Castle & Overton, Inc., *Hamburg,* Hamburg, 1,330 bls. wood pulp, 256 tons.
Castle & Overton, Inc., *Kolsnaren,* Viipuri, 651 bls. wood pulp.
Pulp Sales Corp., *Kolsnaren,* Viipuri, 3,676 bls. sulphite.
Pulp Sales Corp., *Kolsnaren,* Jacobstad, 3,595 bls. sulphite.
Pulp Sales Corp., *Kolsnaren,* Kotka, 130 bls. sulphite.
Absorbo Beer Pad Co., *Vulcania,* Trieste, 208 bls. wood pulp.
Pulp Sales Corp., *Rydboholm,* Kotka, 375 bls. sulphate.
Castle & Overton, Inc., *Rydboholm,* Viipuri, 1,469 bls. wood pulp.
Pulp Sales Corp., *Rydboholm,* Viipuri, 5,970 bls. sulphite, 4,921 bls. sulphate.
Pulp Sales Corp., *Rydboholm,* Rauma, 1,383 bls. sulphite.
Lagerloef Trading Co., *Rydboholm,* Rauma, 739 bls. mechanically ground pulp.

NEWARK IMPORTS

WEEK ENDING OCTOBER 15, 1938

H. G. Craig Co., Inc., *Newscarrier,* Donnacona, 349 rolls newsprint.

BOSTON IMPORTS

WEEK ENDING OCTOBER 15, 1938

M. Sone, *Hallaren,* Riga, 2,794 bls. wood pulp.

NEW LONDON IMPORTS

WEEK ENDING OCTOBER 15, 1938

Gottesman & Co., Inc., *Frode,* Sweden, 3,100 bls. wood pulp.

PHILADELPHIA IMPORTS

WEEK ENDING OCTOBER 15, 1938

J. M. Hagy Waste Works, *Marviken,* Kobe, 75 bls. rags.
Chase National Bank, *Marviken,* Kobe, 30 bls. rags.
Pulp Sales Corp., *Scanmail,* Kotka, 188 bls. sulphite, 32 tons.
Jay Madden Corp., *Scanmail,* Kotka, 52 rolls newsprint.
The Public Ledger, Inc., *Scanmail,* Kotka, 349 rolls newsprint.
Pulp Sales Corp., *Scanmail,* Helsingfors, 520 bls. mechanically ground pulp, 104 tons.
Gottesman & Co., Inc., *Scanmail,* Stockholm, 2,500 bls. sulphite, 254 tons.
Gottesman & Co., Inc., *Schwanheim,* Sweden, 1,950 bls. wood pulp.

WILMINGTON IMPORTS

WEEK ENDING OCTOBER 15, 1938

Castle & Overton, Inc., *Scanmail,* Kotka, 702 bls. wood pulp, 140 tons.
Pulp Sales Corp., Scanmail, Rauma, 5,142 bls. sulphite, 882 tons.
Pulp Sales Corp., *Scanmail,* Helsingfors, 160 bls. mechanically ground pulp, 32 tons.
Gottesman & Co., Inc., *Schwanheim,* Sweden, 3,000 bls. wood pulp.

BALTIMORE IMPORTS

WEEK ENDING OCTOBER 15, 1938

Castle & Overton, Inc., *Kolsnaren,* Viipuri, 2,705 bls. wood pulp.
Scripps Howard Supply Co., Inc., *Kolsnaren,* Kotka, 71 rolls newsprint.
F. H. Shallus Co., *Kolsnaren,* Kotka, 101 rolls newsprint.
Jay Madden Corp., *Kolsnaren,* Kotka, 1,071 rolls newsprint.
Lagerloef Trading Co., *Kolsnaren,* Kotka, 520 bls. mechanically ground pulp.
Pulp Sales Corp., *Kolsnaren,* Kotka, 182 bls. sulphite.
Parsons & Whittemore, Inc., *McKeesport,* ———, 175 bls. wood pulp.
Parsons & Whittemore, Inc., *Carolina Thorden,* ———, 3,200 bls. wood pulp.
Gottesman & Co., Inc., *Frode,* Sweden, 4,125 bls. wood pulp.

NEWPORT NEWS IMPORTS

WEEK ENDING OCTOBER 15, 1938

Parsons & Whittemore, Inc., *Carolina Thorden,* ———, 300 bls. wood pulp.

CHARLESTON IMPORTS

WEEK ENDING OCTOBER 15, 1938

Chase National Bank, *Marviken,* Kobe, 600 bls. bagging.

MONTREAL IMPORTS

WEEK ENDING OCTOBER 15, 1938

M. Sone, *Delhi,* Sundsvall, 3,000 bls. wood pulp.

Champion Brings Out New Coated Sheet

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., October 17, 1938—The Champion Paper and Fibre Company, Hamilton, Ohio, have brought out a new sheet, Namelo, handled in Boston by Cook-Vivian Company and Rutter & McNaught, their local distributors. Namelo is a sheet made and coated on the paper machine under a process invented and developed by Champion. More than 5,000,000 pounds have been printed commercially on various types of equipment to prove the pressroom performance of Namelo. It is a product of Champion research, the result of extensive study and experimentation by a large staff of skilled engineers and scientists. The sheet has a casein coating, applied evenly in a continuous operation of the paper machine, after which it is supercalendered to give a smoother printing surface. Namelo has bright white color and excellent opacity. Making and coating this paper in a single continuous operation on the paper machine permits economy in price. Namelo is stocked in 50, 60 and 70 lb. basis weights in certain standard sizes. There is no penalty for light weight down to 50 lb. basis. The printing quality of the paper is demonstrated in an illustrated broadside, which has been issued and printed under normal conditions. Advantages in the use of this paper are high quality, proved performance and real economy.

The Champion Paper and Fibre Company has issued the new sheet concurrently with an elaborate sample book, which is distributed in Boston by Western Union messengers. There is also a proportionate distribution of the book in Rhode Island, where the Narragansett Paper Company, Providence, is and has been Champion distributor.

Samples of two sheets other than Namelo are included in the sample book, one of which, Falcon Semi-Dull, is making its initial appearance among Champion papers. This paper is inexpensive, with semi-dull advantages, for use in large edition press jobs.

The other grade, a very attractive one, is All Purpose Litho, distinguished by its blue-white color and flat printing surface.

The complete line of Champion offsets is also represented in the sample book.

The book, bound in red and gold, with end leaves of Champion press board, lists the Champion distributors throughout the country and abroad. A condensation of book paper customs is also included.

W. C. Dodge Announces New Lines

BOSTON, Mass., October 17, 1938—W. C. Dodge Paper Company, merchants, are now carrying Old Elmtree Bond and also Polar Bond, a sulphite sheet, under their own watermark.

This firm is now carrying Basic Bond and Index, manufactured by Hollingsworth & Whitney Company.

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, October 19, 1938.

Business in the wholesale paper market continues to gradually improve as general business continues to slowly recover the volume lost during the greater part of the current year. The index of general business activity now stands at approximately 84 per cent, which is nearly 16 per cent below the index of the corresponding period last year. Production in the paper industry continues to lead other industries and the current rate of capacity of over 170 mills, is 2 per cent higher than the rate reported for the last week in September.

Although little change in demand for newsprint is reported for the current week, an improvement in consumer demand is looked for by the trade. A favorable factor is the increase of 11 per cent in newspaper advertising linage for September, which is expected to be about 90 per cent of the volume of last year. Prices continue firm.

The demand for many grades of sulphite paper continues under general expectations. A little improvement in consumer demand is reported in some grades of paper but, by and large, the pick-up in business is rather slow at this date. Considerable more optimism is shown in the attitude of manufacturers' representatives, jobbers and by general paper merchants in regard to the future. The opinion is quite generally expressed that business should be substantially better within a month, and that the volume in the first quarter of next year should equal if not exceed any records of the past.

The demand for kraft paper continues at a high level and orders are reported as running close to production, which is at a high rate of capacity. Prices are quite firm and unchanged.

Mechanical Pulp

The demand for mechanical pulp continues light. Prices remain firm and continue unchanged for the current week.

Chemical Pulp

The chemical pulp market is reported as rather quiet. Although the production of paper continues to rise, mills have large stocks of pulp in storage and a considerable tonnage is reported on the docks. Prices continue firm and no changes in the current quotations of any grade of domestic, Canadian, or European pulp is reported this week.

Old Rope and Bagging

Business in old rope is quiet. Prices are firm and continue unchanged at prevailing quotations. The demand for old bagging is reported in some quarters as active. Prices remain firm at current levels.

Rags

The demand for all grades of domestic rags is reported as light. Prices are firm and unchanged. The foreign rag market is inactive and prices continue nominal.

Waste Paper

The volume of business in waste paper is reported as light for the week. No improvement in the market situation has occurred and the market is characterized as spotty, with some grades showing firmness, while some of the lower grades are soft. Prices continue unchanged with the exception of a small increase in strictly folded news, which is currently quoted at from .30 to .35 per cwt. No. 1 mixed paper on the report of larger accumulations, is lower this week and currently quoted at from .15 to .20 per cwt.

Twine

No change in either demand or prices is reported this week on any grade of hard or soft fiber twine. Prices are relatively firm.

To Protect Collins Mfg. Co. Plant

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., October 17, 1938—Steps are being taken by county and town officials to bring about suitable protection for the Collins Manufacturing company plant in Wilbraham to guard against a repetition of the damage of $250,000 done to the plant and its real estate during the recent flood.

Application has been made by the company for a loan from the Federal Disaster Loan Corporation and it is hoped that the company may be back in manufacturing within another month.

In the meantime, officials are pressing the State Highway department for a new bridge which went out in the flood and suitable walls to withstand the pressure of another flood. During the high water of a few weeks ago, the Chicopee River quit its channel and flowed through the Collins property. It is feared by town officials that another disaster similar to the last one would drive the Collins company from the town.

Paper Stock Men Look for Improvement

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., October 17, 1938—Paper stock dealers look for an upward trend in the industry for the balance of the year due to the fact that no war is imminent and also for the reason of replacement necessitated by the losses caused by the hurricane. Business in paper stock has been quiet for a considerable period.

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, October 19, 1938.

BLANC FIXE—The prices of blanc fixe continue firm and are unchanged at prevailing market quotations. The pulp is quoted at from $42.50 to $45 per ton, in bulk; the powder is offered at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER — Quotations on bleaching powder continue firm and conform to prevailing market prices. Bleaching powder is quoted at from $2 to $2.25 per 100 pounds, in drums, at works.

CASEIN—The demand for casein continues fair. Domestic ground, 20-30 mesh, casein is quoted at from 9 to 9½ cents per pound; domestic finely ground, 80-100 mesh, at 9½ cents per pound; all prices in bags, car lot quantities.

CAUSTIC SODA—Quotations of caustic soda continue firm and conform to prevailing market prices. Solid caustic soda is quoted at from $2.10 to $2.30 per 100 pounds; flake and ground at from $2.50 to $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—The prices of china clay are firm and unchanged at prevailing market levels. Domestic filler clay is quoted at from $6.50 to $12 per ton; coating clay at from $11 to $12 per ton, at mines. Imported clay is quoted at from $14.50 to $25 per ton, ship side.

CHLORINE—Quotations on chlorine are firm and conform to prevailing market prices. Chlorine is quoted at $2.15 per 100 pounds, in single-unit tank cars, f. o. b. works.

ROSIN—The demand for rosin is reported as fair for the current week. Prices are lower. "G" gum rosin is quoted at $5.05; "FF" wood rosin at $4.95 per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent gum rosin size is quoted at $2.77 per 100 pounds, f. o. b., shipping point.

SALT CAKE—Prices of salt cake continue firm and unchanged at prevailing market quotations. Quotations range at from $12 to $13.50 per ton; chrome salt cake at from $11 to $12 per ton, f. o. b., shipping point.

SODA ASH—Quotations on soda ash are firm and conform to prevailing market prices. Quotations on soda ash in car lots, at works, per 100 pounds, are as follows: in bulk, $.90; in bags, $1.05; and in barrels, $1.35.

STARCH—The demand for corn starch is reported as good and prices relatively firm. Globe pearl is quoted at $2.40 per 100 pounds, in bags, and at $2.65 in barrels. Special paper starch is quoted at $2.50 per 100 pounds, in bags, and at $2.75 in barrels. All prices in car lots, f. o. b., Chicago.

SULPHATE OF ALUMINA—Prices of sulphate of alumina continue firm and unchanged at prevailing market quotations. The commercial grades are quoted at $1.15 per 100 pounds; iron free at $1.30 per 100 pounds, in barrels, car lot quantities.

SULPHUR—Quotations on sulphur continue firm and conform to prevailing market prices. Annual contracts are quoted at $16 per long ton, f. o. b. cars at mines. Spot and nearby car lots are offered at $19 per ton.

TALC—The prices of talc continue firm and unchanged at prevailing market levels. Domestic talc is quoted at from $15 to $18 per ton, Eastern mines. Imported talc is offered at from $25 to $40 per ton, on dock.

Market Quotations

Paper

(Delivered New York)

News, per ton—		
Roll, contract	$50.00	@ —
Sheets	58.00	@ —
Kraft—per cwt.—Delivered Zone A		
No. 1 Northern	$4.75	@$5.25
Superstandard	4.12½	@ 4.62½
Northern Standard Wrapping	4.00	@ —
Standard Wrapping	3.50	@ —
Tissues—Per Ream—Carlots		
White No. 1	.92½	@ —
White No. 1 M. G.	.90	@ —
White No. 1½	.67½	@ —
White No. 2	.60	@ —
Anti-Tarnish M. G.	.75	@ —
Colored	.87½	@ —
Kraft	.75	@ —
Manila	.60	@ —
Unbl. Toilet, 1 M.	3.20	@ —
Bleached Toilet	5.26	@ —
Paper Towels—		
Unbleached	1.80	@ —
Bleached	2.10	@ —
Manila—per cwt.—C. l. f. a.		
No. 1 Jute	$8.25	@$9.75
No. 2 Jute	7.50	@ 9.00
No. 1 Manila Wrapping, 35 lb.	5.00	@ —
No. 2 Manila Wrapping, 35 lb.	4.75	@ —
Boards, per ton—		
News	$27.50	@$30.00
Chip	27.50	@ 30.00
Sgl. Mla. Ll. Chip.	42.50	@ —
Jute Lined Chip	42.50	@ 45.00
White Pat. Coated	55.00	@ 57.50
Kraft Liners	42.50	@ 50.00
Binders Boards	71.00	@77.00

The following are representative of distributors' resale prices:—

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1.	$39.10@$46.00	$40.25@$47.25
100% Rag	31.05@ 36.50	32.20@ 37.75
85% Rag		29.90@ 35.00
75% Rag	23.60@ 27.75	24.75@ 29.00
65% Rag		21.65@ 26.25
50% Rag	17.55@ 21.50	18.70@ 22.75
25% Rag	14.65@ 17.75	15.80@ 19.25

Colors at $1.00 cwt. extra

Sulphite Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$8.80@$10.75	$9.95@$12.00
No. 3	7.90@ 9.50	9.05@ 11.00
No. 4	7.00@ 8.50	8.20@ 10.00

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper, Delivered in Zone 1:

No. 1 Glossy Coated	$10.80@$12.25
No. 2 Glossy Coated	9.25@ 10.50
No. 3 Glossy Coated	8.15@ 9.25
No. 4 Glossy Coated	7.65@ 8.75
No. 1 Antique (watermarked)	7.65@ 8.75
No. 2 Offset	7.00@ 8.00
A Grade E. F.	6.80@ 7.75
A Grade S. & S. C.	7.05@ 8.00
B Grade E. F.	6.25@ 7.25
B Grade S. & S. C.	6.50@ 7.50
C Grade E. F.	6.00@ 7.00
C Grade S. & S. C.	6.25@ 7.25
D Grade E. F.	5.70@ 6.75
D Grade S. & S. C.	5.95@ 7.00

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—		
Moist	25.00	@28.00
Dry	25.00	@28.00
(Delivered)		
No. 1 Domestic and Canadian	27.00	@30.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—		
Prime Bleached Sulphite	2.40	@ 2.75
Prime Qualities—		
Easy-Bleaching Sulphite	1.95	@ 2.10
Strong Unbleached Sulphite	1.85	@ 2.00
(On Dock, Atlantic Ports)		
Kraft Bleached	2.75	@ 3.00
Kraft Light & Strong	1.90	@ 2.00
Kraft No. 1	1.75	@ 1.90
Kraft No. 2	1.50	@ 1.65
(F.o.b. Pulp Mill)		
Kraft Domestic	1.50	@ 1.90
(Delivered)		
Soda Bleached	2.55	@ —

Add 60 cents per short ton, dock charges for Albany; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—		
New White, No. 1.	6.75	@ 7.00
Silesias No. 1	4.00	@ 4.25
New Unbleached	6.75	@ 7.00
Blue Overall	5.50	@ 5.75
Fancy	2.10	@ 2.25
Washables	1.60	@ 1.70
Mixed Khaki Cuttings	3.25	@ 3.75
O. D. Khaki Cuttings	4.00	@ 4.25

Old Rags

White, No. 1—		
Repacked	3.15	@ 3.40
Miscellaneous	2.60	@ 2.75
White, No. 2—		
Repacked	1.90	@ 2.10
Miscellaneous	1.50	@ 1.60
Thirds and Blues—		
Repacked	1.40	@ 1.50
Miscellaneous	1.25	@ 1.30
Roofing Rags—		
No. 1	1.00	@ 1.10
No. 2	.85	@ .90
No. 3 (bagging)	.85	@ .90
No. 4	.65	@ .70
No. 5A	.65	@ .70

Foreign Rags

New Rags

New Dark Cuttings	2.25	@ 2.40
New Mixed Cuttings	2.00	@ 2.20
New Light Silesias	5.50	@ 5.75
Light Flannelettes	5.50	@ 5.75
New White Cuttings	7.00	@ 7.50
New Light Oxford	4.00	@ 4.50
New Light Prints	3.00	@ 3.25

Old Rags

No. 1 White Linens	7.50	@ 8.50
No. 2 White Linens	6.50	@ 7.50
No. 3 White Linens	4.50	@ —

FINEST CLAYS

IMPORTED

EASTON PAPER MAKERS IMPORTING CO. INC. EASTON, PENNSYLVANIA, U.S.A.

DOMESTIC

DOMESTIC—TALC AND WHITING

Pure Titanium Dioxide

ZOPAQUE RG

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giving maximum suspension and dispersion in water, assuring high efficiency and value.

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Steel, Copper, Brass
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TANKS

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KALAMAZOO TANK & SILO CO.

KALAMAZOO, MICHIGAN

WOOD STAVE • GLAZED TILE

LEATHER BELTS

FOR 60 YEARS SPECIALISTS TO THE PAPER MILLS—

Oil and water resistant belts that will save you money in the long run. ¶ Since 1876 we have been supplying the industry direct from our own tanneries.

Write Barnes for better belts.

37 Batterymarch St. Boston, Mass.

No. 4 White Linens.	2.25	@	3.25
No. 1 White Cotton.	4.25	@	4.75
No. 2 White Cotton.	3.25	@	3.75
No. 3 White Cotton.	2.50	@	3.00
No. 4 White Cotton.	1.90	@	2.20
Extra Light Prints..	2.00	@	2.40
Ord. Light Prints...	1.75	@	2.15
Med. Light Prints...	1.55	@	1.95
Dutch Blue Cottons..	2.25	@	2.50
French Blue Linens..	3.00	@	—
Checks and Blues...	2.00	@	—
Linsey Garments....	1.90	@	2.00
Dark Cottons.....	1.50	@	1.60
Old Shopperies.....	1.30	@	1.45
New Shopperies.....	1.45	@	1.50
French Blues.....	2.25	@	2.50

Old Rope and Bagging

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	2.40	@	2.50
Domestic	2.25	@	2.35
Wool Tares, light...	1.80	@	1.90
Wool Tares, heavy...	1.90	@	2.00
Bright Bagging.....	1.70	@	1.80
Manila Rope—			
Foreign	2.90	@	3.00
Domestic	2.50	@	2.75
Jute Threads.....	2.75	@	3.00
Sisal Strings.....	1.50	@	1.60
Mixed Strings.....	.60	@	.70

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	2.65	@	2.70
Ordinary Hard White No. 1....	1.90	@	2.00
Soft White No. 1..	1.75	@	1.80
Soft White Extra..	2.25	@	2.40
Flat Stock—			
Stitchless	.80	@	.85
Overissue Mag.....	.70	@	.75
Solid Flat Book...	.60	@	.65
Crumbled No. 1....	.40	@	.45
Ledger Stock White.	1.15	@	1.25
Ledger Stock Colored	.65	@	.70
New B. B. Chips....	.15	@	.20
Manila—			
New Env. Cut.....	1.40	@	1.50
New Cuttings.....	1.25	@	1.35
Old Kraft Machine—			
Compressed bales..	.65	@	.75
News—			
No. 1 White News	1.35	@	1.40
Strictly Overissue.	.50	@	.55
Strictly Folded....	.30	@	.35
No. 1 Mixed Paper..	.15	@	.20

Twines

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.11	@	.13
White Hemp.....	.12	@	.14
Fine Polished—			
Fine India.....	.15	@	.17
Unpolished—			
Box	.08½	@	—
Paper Makers.....	.07½	@	.08½
Tube Rope.....	.09	@	.10
Wall Paper.....	.10	@	.11
Wrapping	.11	@	.13
Soft Fiber Rope...	.09½	@	.11½
Cotton	.15	@	.20

(Hard Fiber)

Medium Java.....	.09	@	.10
Mex. Sisal.....	.08½	@	.09½
Manila	.18	@	.25
Domestic	2.65	@	2.75
Sisal Rope.....	1.65	@	1.85
Mixed Rope.....	.50	@	.75
Transmission Rope...	1.90	@	2.00
Soft Jute Ropes.....	1.85	@	2.00
Jute Carpet Threads..	.75	@	.90
Gunny Bagging—			
Foreign	2.25	@	—
Domestic	2.00	@	—
Bleachery Burlap....	3.25	@	3.62½
Scrap Burlap—			
Foreign	1.65	@	1.85
Domestic	1.40	@	1.55
Scrap Sisal	1.25	@	1.50
Scrap Sisal for Shredding	1.75	@	1.90
Wool Tares, Heavy..	1.65	@	1.85
New Burlap Cuttings	2.00	@	2.25
Aust. Wool Pouches.	2.75	@	3.10
Heavy baling bagging	2.00	@	—
Paper Mill Bagging..	1.00	@	1.15
No. 2 Bagging.....	.60	@	.70

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints...	.03¼	@	.03½
New White No. 1...	.06¾	@	.07
New Light Flannelettes	.04½	@	.04¾
Silesias No. 1.....	.04½	@	.04½
New Black Silesias..	.03½	@	.04
Silesias No. 1			
Soft Unbleached.....	.06¼	@	.06¾
Blue Cheviots.....	.05	@	.05¼
Fancy	.03	@	.03¼
Washable	.02¾	@	.03
Cottons—According to grades—			
Washable No. 1....	.04¼	@	.04¾
Dark Cottons	1.05	@	1.15
Dutch Blues.....	2.65	@	2.75
New Checks and Blues	2.85	@	2.95
Old Fustians.....	2.25	@	2.50
Old Linsey Garments	2.20	@	2.35
New Silesias.....	4.75	@	—

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	—	@	2.75
Miscellaneous	2.50	@	2.75
White No. 2—			
Repacked	1.90	@	2.00
Miscellaneous	2.00	@	2.25
Twos and Blues.....	1.75	@	2.00
Old Blue Overalls...	1.50	@	—
Third and Blues—			
Repacked	1.37½	@	1.75
Miscellaneous	1.25	@	1.65
Black Stockings.....	3.90	@	4.00
Roofing Stock—			
No. 1.....	1.00	@	1.10
No. 2.....	.75	@	.85
No. 3.....	.65	@	.70

Foreign Rags

(F. o. b. Boston)

Dark Cottons	1.05	@	1.15
Dutch Blues.....	2.65	@	2.75
New Checks and Blues	2.85	@	2.95
Old Fustians.....	2.25	@	2.50
Old Linsey Garments	2.20	@	2.35
New Silesias.....	4.75	@	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1.	.06	@	.06¼
New White, No. 2.	.03½	@	.04
Light Silesias.....	.03½	@	.04
Silesias, No. 1....	—	@	.04½
Black Silesias, soft.	—	@	.03
New Unbleached..	.05½	@	.06
Washable, No. 1..	.01½	@	.01¾
Blue Overall.....	.04	@	.04½
Cottons—According to grades—			
Washable No. 2...	.01	@	.01¼
New Blue.....	.01	@	.01¼
Fancy Percales....	—	@	.02½
New Black Soft...	.03	@	.03½
New Light Seconds	—	@	.04½
New Dark Seconds	.50	@	.75
Khaki Cuttings—			
No. 1 O. D.....	.03	@	.03½
No. 2 Mixed.....	.02	@	.02½
Corduroy	—	@	.02
New Canvas.....	.05	@	.05½
New Black Mixed.	.02½	@	.02¾

Domestic Rags (Old)

White No. 1—			
Repacked	3.00	@	3.25
Miscellaneous	2.50	@	2.75
Thirds and Blues—			
Miscellaneous	1.00	@	1.25
Repacked	1.50	@	1.75
Black Stockings (Export)	3.00	@	3.50
Roofing Stock—			
Foreign No. 1....	—	@	.95
Domestic No. 1...	—	@	.95
Domestic No. 2...	—	@	.85
Roofing Bagging..	—	@	.60

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.75	@	2.00
Domestic	1.50	@	1.75
Manila Rope.....	2.75	@	3.00
Sisal Rope.....	1.50	@	1.75
Mixed Rope.....	.75	@	1.00
Scrap—			
No. 1.....	—	@	1.50
No. 2.....	1.00	@	1.25
Wool Tares, heavy..	3.25	@	3.50
Mixed Strings.....	.75	@	1.00
No. 1 New Light Burlap	2.50	@	3.00
New Burlap Cuttings	1.75	@	2.00

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White.	2.25	@	2.30
No. 2 Hard White.	1.90	@	2.00
No. 1 Soft White..	1.75	@	1.80
No. 2 Soft White..	1.30	@	1.40
No. 1 Mixed.....	.65	@	.75
Solid Ledger Stock..	1.45	@	1.50
Ledger Stock, white.	1.15	@	1.20
Ledger Stock, colored	.75	@	.80
No. 1 Books, heavy..	.60	@	.75
Manila Cuttings.....	1.45	@	1.50
Print Manila.....	.40	@	.45
Container Manila....	.35	@	.40
Kraft Paper.....	.75	@	.80
No. 1 Mixed Paper..	.20	@	.25
Straw Board Chip...	.25	@	.30
Binders Board Chip.	.25	@	.30
Corrugated Board...	.50	@	.55
Overissue News.....	.40	@	.45
Old Newspapers.....	.35	@	.40

BOSTON

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.25	@	2.50
No. 1 Soft White..	1.85	@	2.15
No. 2 Mixed.....	.75	@	.80
Solid Ledger Books..	1.50	@	1.75
Overissue Ledger Stock	1.30	@	1.50
Mixed Ledgers.....	.85	@	.90
No. 1 Books, heavy..	.65	@	.75
No. 1 Books, light...	.65	@	.75
Crumpled Stitchless Book Stock.....	.55	@	.65
Manila Env. Cuttings	1.85	@	2.00
Manila Envelope Cuttings, extra quality.	2.00	@	2.10
No. 1 Old Manila...	.95	@	1.00
White Blank News..	1.30	@	1.40
No. 1 Kraft.....	.80	@	—
Mixed Papers.....	.15	@	—
Print Manila.....	.45	@	.55
Container Manilas...	.27½	@	—
Old Newspapers.....	.25	@	.32½
Paper Wool Strings..	.80	@	—
Overissue News.....	.45	@	.50
Box Board Chips....	.20	@	.25
Kraft corrugated boxes	.70	@	—
Kraft corrugated boxes	.65	@	.70
Screening Wrappers..	.40	@	.45

Bagging

(F. o. b. Boston)

Manila Rope—			
Foreign	3.00	@	3.15

CHICAGO

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings....	1.80	@	1.90
No. 1 Hard White.	1.70	@	1.80
No. 1 Soft White..	1.50	@	—
Ledger & Writings..	.75	@	.80
Solid Books.....	.55	@	—
Blanks	.90	@	—
Krafts	.60	@	—
New Kraft Cuts.....	1.10	@	—
Manila Env. Cuts...	Nominal		
Ex. No. 1 Manila...	Nominal		
Print Manila.....	Nominal		
Overissue News.....	.35	@	—
Old Newspapers—			
No. 1 Folded News	.30	@	—
No. 1 Mixed Paper	.20	@	—
Roofing Stocks—			
No. 1.....	2.00	@	2.10
No. 2.....	1.85	@	1.90

TORONTO

Paper

Bonds and Ledgers

Delivered

No. 1 White	.36½	@	—
No. 1 Tints	.37½	@	—
No. 2 White	.26½	@	—
No. 2 Tints	.27½	@	—
No. 4 White 15.50		@	16.50
No. 4 Tints 16.50		@	—
No. 5 Bond—White 11.25		@	—
No. 5 Bond—Tints .12.25		@	—
No. 5 Bond—Golden Rod 12.75		@	—
No. 5 Ledger—White 11.25		@	—
No. 5 Ledger—Tints.11.25		@	—
No. 6 Bond—White .10.15		@	—
No. 6 Bond—Tints .10.65		@	—
No. 6 Bond—Golden Rod 12.15		@	—
No. 7 Bond—White . 8.50		@	—
No. 7 Bond—Tints . 9.00		@	—
No. 7 Bond—Golden Rod 10.50		@	—
Book—			
No. 1 M. F. 7.35		@	—
No. 2 M. F. 6.85		@	—
No. 3 M. F. 5.60		@	—
No. 1 S. C. 7.60		@	—
No. 2 S. C. 7.10		@	—
No. 3 S. C. 6.10		@	6.35
No. 1 Coated Book and Litho 12.50		@	—
No. 2 Coated Book and Litho 11.00		@	—
No. 3 Coated Book and Litho 10.00		@	—
Coated tinted.....13.50		@	—
Wrapping—delivered—			
Rag Brown.....	4.85	@	5.25
White Wrap	4.00	@	—
"B" Manila.....	4.90	@	6.15
No. 1 Manila.....	5.50	@	6.90
Fiber	5.50	@	6.90
Kraft No. 2.....	5.50	@	6.90

(F. o. b. Cars, Toronto)

News per ton—			
Rolls (contract)..$46.00		@	—
Sheets 54.00		@	—

Pulp

Ground wood.....29.00		@	—
Unbleached Sulphite..49.00		@	—
Kraft 50.00		@	—
Soda 54.00		@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut...	2.25	@	—
Soft White.....	2.15	@	—
White Blk. News..	1.25	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	.80	@	—
Light and Crumpled Book Stock.	.70	@	—
Ledgers and Writings	1.10	@	—
Manilas—			
New Manila Cut...	1.35	@	—
Printed Manilas...	.45	@	—
Kraft	.95	@	—
News and Scrap—			
Strictly Overissue.	.50	@	—
Strictly Folded....	.45	@	—
No. 1 Mixed Paper..	.30	@	—

Domestic Rags

(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.06¾	@	.07
Fancy Shirt Cuttings	.02¼	@	.02½